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Engineering Corporation

TECHNICAL SPECIFICATIONS AND PLANS FOR REMEDIAL MEASURES AEROVOX PROPERTY, NEW BEDFORD, MA

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PROJECT DESCRIPTION

Purpose of Proposed Project

The purpose of the proposed project is to implement remedial measures for the on-site containment of soils containing polychlorinated biphenyls (PCBs) on the Aerovox plant site in New Bedford.

In May 1982, Aerovox Incorporated entered into Consent Orders with the U.S. Environmental Protection Agency (U.S. EPA) and the Massachusetts Department of Environmental Quality Engineering (DEQE). Under the Consent Orders, Aerovox agreed to investigate the subject plant site to determine PCB levels and design appropriate remedial responses. Based on engineering studies completed in February 1983, Aerovox proposed and the U.S. EPA and DEQE approved the remedial measures described below. It is anticipated that the proposed project will be incorporated into the Consent Decrees.

Project Location and Description

The Aerovox plant site is located at 740 Belleville Avenue in New Bedford, at the northern end of the Acushnet River estuary (see Figure 1). Under the Consent Orders, the portions of the plant site investigated included: (1) the unpaved areas at the eastern end of the site bordering on the Acushnet River; and (2) an 8-foot wide stip of gravel running along the length of the Aerovox building on its north side. In total, the subject area encompasses about 1/2-acre of unpaved Aerovox property.

The investigation of these unpaved areas revealed the presence of PCBs in surface and subsurface soils. The depths at which PCBs were found was variable, with most of the PCBs found in the top 2 to 3 feet of soil. The study area was also found to be underlain by an organic peat deposit which prevents the movement of PCBs to deeper levels. Soils along the shoreline were observed to be subject to tidal action and possible erosion. After consideration of various engineering alternatives

FIGURE 1 LOCUS MAP, AEROVOX PROPERTY, NEW BEDFORD, MA
(from USGS New Bedford North Quadrangle)

to minimize the potential for PCBs to migrate from the site, the following plan has been selected:

1. Installation of a coated marine steel sheet piling cutoff wall to serve as a vertical barrier to groundwater and tidal flow into and out of the contaminated soils; and,

2. Capping of the contaminated soil areas by paving with hydraulic asphalt concrete (HAC) to prevent rainfall infiltration into the contaminated soils and erosion by surface runoff.

The specific technical details on the steel sheet piling cutoff wall and the HAC surface cap are provided in the accompanying plans and specifications.

GENERAL SPECIFICATIONS

Division 7

7.1 Definitions. Wherever the words defined in this section or pronouns used in their stead occur in the contract documents, they shall have the meanings herein given.

Mass. DPW Standard Specifications for Highways and Bridges. The words "Mass. DPW Specifications" wherever used herein shall mean the Mass. DPW Standard Specifications for Highways and Bridges and any subsequent amendments or addenda.

As Directed, As Required, Etc. Wherever in the contract documents, or on the drawings, the words "as directed," "as ordered," "as requested," "as required," "as permitted," or words of like import are used, it shall be understood that the direction, order, request, requirement, or permission of the Engineer is intended. Similarly, the words "approved," "acceptable," "satisfactory," and words of like import shall mean approved by, acceptable to, or satisfactory to the Engineer.

Elevation. The figures given on the drawings or in the other contract documents after the word "elevation" or abbreviation of it shall mean the distance in feet above the datum adopted by the Engineer.

Rock. The word "rock," wherever used as the name of an excavated material or material to be excavated, shall mean only boulders and pieces of concrete or masonry exceeding 1 cu. yd. in volume, or solid ledge rock which, in the opinion of the Engineer, requires, for its removal, drilling and blasting, wedging, sledging, barring, or breaking up with a power-operated tool. No soft or disintegrated rock which can be removed with a hand pick or power-operated excavator or shovel, no loose, shaken, or previously blasted rock or broken stone in rock fillings or elsewhere, and no rock exterior to the maximum limits or measurement allowed, which may fall into the excavation, will be measured or allowed as "rock."

Earth. The word "earth," wherever used as the name of an excavated material or material to be excavated, shall mean all kinds of material other than rock as above defined.

7.2 Abbreviations. Where any of the following abbreviations are used in the contract documents, they shall have the meaning set forth opposite each:

AASHO	American Association of State Highway Officials'
ACI	American Concrete Institute
AGA	American Gas Association
AGMA	American Gear Manufacturers Association
AIEE (IEEE)	American Institute of Electrical Engineers (Institute of Electrical and Electronics Engineers, Inc.)
AISC	American Institute of Steel Construction
ANS or USAS	American National Standards (formerly United States of America Standards)
ANSI or USASI	American National Standards Institute (formerly United States of America Standards Institute)

API	American Petroleum Institute
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating, Refrigeration and Air Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
AWWA	American Water Works Association
IBR	Institute of Boiler and Radiator Manufacturers
NBS	National Bureau of Standards
NEC	National Electrical Code, latest edition
NEMA	National Electrical Manufacturers Association
NFPA	National Fire Protection Association
SMACNA	Sheet Metal and Air Conditioning Contractors National Association, Inc.
Federal Specifications	Federal Specifications issued by the Federal Supply Service of the General Services Administration, Washington, D.C.
125-lb. AN Standard 250-lb. AN Standard	American National Standard for Cast-Iron Pipe Flanges and Flanged Fittings, Designation B16.1-1967, for the sppropriate class
A.W.G.	American or Brown Sharpe Wire Gage
C.S.	Commercial Standard
E.D.R.	Equivalent direct radiation
O.S.&Y	Outside screw and yoke
St. W.G.	U.S. Steel Wire, Washburn and Moen, American Steel and Wire or Roebling Gage
W.O.G.	Water, Oil, Gas
W.S.P.	Working steam pressure
NPT	National Pipe Thread

7.3 Handling and Distribution. The Contractor shall handle, haul, and distribute all materials and all surplus materials on the different portions of the work, as necessary or required shall provide suitable and adequate storage room for materials and equipment during the progress of the work, and be responsible for the protection, loss of, or damage to materials and equipment furnished by him, until the final completion and acceptance of the Work.

Storage and demurrage charges by transportation companies and vendors shall be borne by the Contractor.

7.4 Materials - Samples - Inspection - Approval. Unless otherwise expressly provided on the drawings or in any of the other contract documents, only new materials and equipment shall be incorporated in the work. All materials and equipment furnished by the Contractor to be incorporated in the work shall be subject to the inspection and approval of the Engineer. No material shall be processed or fabricated for the work or delivered to the work site without prior approval of the Engineer.

As soon as possible after execution of the Agreement, the Contractor shall submit to the Engineer the names and addresses of the manufacturers and suppliers of all materials and equipment he proposes to incorporate into the work. When shop and working drawings are required as specified below, the Contractor shall submit prior to the submission of such drawings, data in sufficient detail to enable the Engineer to determine whether the manufacturer and/or the supplier have the ability to furnish a product meeting the Specifications. As requested, the Contractor shall also submit data relating to the materials and equipment he proposes to incorporate into the work in sufficient detail to enable the Engineer to identify and evaluate the particular product and to determine whether it conforms to the Contract requirements. Such data shall be submitted in a manner similar to that specified for submission of shop and working drawings.

Facilities and labor for the storage, handling, and inspection of all materials and equipment shall be furnished by the Contractor. Defective materials and equipment shall be removed immediately from the site of the work.

If the Engineer so requires, either prior to or after commencement of the work, the Contractor shall submit samples of materials for such special tests as the Engineer deems necessary to demonstrate that they conform to the Specifications. Such samples, including concrete test cylinders, shall be furnished, taken, stored, packed, and shipped by the Contractor as directed. The Contractor shall furnish approved molds for making concrete test cylinders. Except as otherwise expressly specified, the Owner shall make arrangements for, and pay for, the tests.

All samples shall be packed so as to reach their destination in good condition, and shall be labeled to indicate the material represented, the name the building or work, and location for which the material is intended, and the name of the Contractor submitting the sample. To ensure consideration of samples, the Contractor shall notify the Engineer by letter that the samples have been shipped and shall properly describe the samples in the letter. The letter of notification shall be sent separate from and should not be enclosed with the samples.

The Contractor shall submit data and samples, or place his orders, sufficiently early to permit consideration, inspection, testing, and approval before the materials and equipment are needed for incorporation in the work. The consequences of his failure to do so shall be the Contractor's sole responsibility.

In order to demonstrate the proficiency of workmen, or to facilitate the choice among several textures, types, finishes, surfaces, etc., the Contractor shall provide such samples of workmanship of wall, floor, finish, etc., as may be required.

When required, the Contractor shall furnish to the Engineer triplicate sworn copies of manufacturer's shop or mill tests (or reports from independent testing laboratories) relative to materials, equipment performance ratings, and concrete data.

After approval of the samples, data, etc., the materials and equipment used on the work shall in all respects conform therewith.

7.5 Inspection of Work Away From The Site. If work to be done away from the construction site is to be inspected on behalf of the Owner during its fabrication, manufacture, or testing, or before shipment, the Contractor shall give notice to the Engineer of the place and time where such fabrication, manufacture, testing, or shipping is to be done. Such notice shall be in writing and delivered to the Engineer in ample time so that the necessary arrangements for the inspection can be made.

7.6 Contractor's Shop and Working Drawings. The Contractor shall submit for approval (in reproducible transparency form unless otherwise specified) shop and working drawings of concrete reinforcement, structural details, and pipe details for flared ends and manholes where requested.

When so specified or if considered by the Engineer to be acceptable, manufacturer's specifications, catalog data, descriptive matter, illustrations, etc., may be submitted for approval in place of shop and working drawings. In such case, the requirements shall be as specified for shop and working drawings, insofar as applicable, except that the submission shall be in quadruplicate.

The Contractor shall be responsible for the prompt and timely submittal of all shop and working drawings so that there shall be no delay to the work due to the absence of such drawings.

No material or equipment shall be purchased or fabricated especially for the contract until the required shop and working drawings have been submitted as hereinabove provided and approved as conforming to the contract requirements. All such materials and equipment and the work involved in their installation or incorporation into the work shall then be as shown in and represented by said drawings.

Until the necessary approval has been given, the Contractor shall not proceed with any portion of the work, the design or details of which are dependent upon the design and details of work, materials, equipment or other features for which approval is required.

All shop and working drawings shall be submitted to the Engineer by and/or through the Contractor, who shall be responsible for obtaining shop and working drawings from his subcontractors and returning approved drawings to them. All shop and working drawings shall be prepared on standard size, 24-in. by 36-in. sheets, except those which are made by changing existing standard shop or working drawings. All drawings shall be clearly marked with the names of the Owner, Contractor and building, equipment, or structure to which the drawing applies, and shall be suitably numbered. Each shipment of drawings shall be accompanied by a letter of transmittal giving a list of the drawing numbers and the names mentioned above.

Only drawings which have been checked and corrected by the fabricator should be submitted to the Contractor by his subcontractors and vendors. Prior to submitting drawings to the Engineer, the Contractor shall check thoroughly all

such drawings to satisfy himself that the subject matter thereof conforms to the Drawings and Specifications in all respects. All drawings which are correct shall be marked with the date, checker's name, and indication of the Contractor's approval, and then shall be submitted to the Engineer; other drawings shall be returned for correction.

The approval of shop and working drawings, etc., will be general only and shall not relieve or in any respect diminish the responsibility of the Contractor for details of design, dimensions, etc., necessary for proper fitting and construction of the work as required by the Contract and for achieving the result and performance specified thereunder.

7.7 Occupying Private Land. The Contractor shall not (except after written consent from the proper parties) enter or occupy with men, tools, materials, or equipment, any land outside the rights-of-way or property of the Owner. A copy of the written consent shall be given to the Engineer.

7.8 Interference With and Protection of Streets. The Contractor shall not close or obstruct any portion of a street, road, or private way without obtaining permits therefor from the proper authorities. If any street, road or private way shall be rendered unsafe by the Contractor's operations, he shall make such repairs or provide such temporary ways or guards as shall be acceptable to the Engineer and to the proper authorities.

Streets, road, private ways, and walks not closed shall be maintained passable and safe by the Contractor, who shall assume and have full responsibility for the adequacy and safety of provisions made therefor.

The Contractor shall, at least 24 hours in advance, notify the Police and Fire Departments in writing, with a copy to the Engineer, if the closure of a street or road is necessary. He shall cooperate with the Police Department in the establishment of alternate routes and shall provide adequate detour signs, plainly marked and well lighted, in order to minimize confusion.

7.9 Storage of Materials and Equipment. All excavated materials, construction equipment, and materials and equipment to be incorporated in the work shall be placed so as not to injure any part of the work or existing facilities and so that free access can be had at all times to all parts of the work and to all public utility installations in the vicinity of the work.

7.10 Insufficiency of Safety Precautions. If at any time, in the sole judgment of the Engineer, the work is not properly lighted, barricaded, or in any other respects safe in regard to public travel, persons on or about the work, or public or private property, the Engineer shall have the right to order such safeguards to be erected and such precautions to be taken as he deems advisable, and the Contractor shall comply promptly with such orders. If, under such circumstances, the Contractor does not or cannot immediately put the work and the safeguards into proper and approved condition or if the Contractor or his

representative is not upon the site so that he can be notified immediately of the insufficiency of safety precautions, the Engineer may put the work into such a condition that it shall be, in his opinion, in all respects safe. The Contractor shall pay all costs and expenses incurred by the Engineer or Owner in so doing. Such action of the Engineer, or his failure to take such action, shall in no way relieve or diminish the responsibility of the Contractor for any and all costs, expenses, losses, liability, claims, suits, proceedings, judgments, awards or damages resulting from, by reason of or in connection with any failure to take safety precautions or the insufficiency of the safety precautions taken by him or by the Engineer acting under authority of this subsection.

7.11 Sanitary Regulations. The Contractor shall provide adequate sanitary facilities for the use of those employed on the work. Such facilities shall be made available when the first employees arrive on the site of the work, shall be properly secluded from public observation, and shall be constructed and maintained during the progress of the Work in suitable numbers and at such points and in such manner as may be required or approved.

The Contractor shall maintain the sanitary facilities in a satisfactory and sanitary condition at all times and shall enforce their use. He shall rigorously prohibit the committing of nuisances on the site of the work, on the lands of the Owner, or on adjacent property.

The Owner and the Engineer shall have the right to inspect such facilities at all times to determine whether or not they are being properly and adequately maintained.

7.12 Lines, Grades, and Measurements. The controlling lines and grades shall be given to the Contractor, who shall provide at his own expense such batter boards, forms, materials, and labor as may be required. Additional batter boards, lines, grades, and forms shall be furnished and set by the Contractor. If the Contractor through willfulness or carelessness removes, or permits to be removed, any reference marks establishing said controlling lines and grades before the prosecution of the work requires such removal, the replacement of such reference marks shall be set at the Contractor's expense.

The Contractor shall furnish to the Engineer such assistance as may be needed for setting or checking lines and grades and making other measurements in connection with the work. This will require the part-time services of one or two men of the Contractor's organization. Such help shall be furnished promptly, whenever needed, in order not to delay the work.

The Contractor shall make all measurements and check all dimensions necessary for the proper construction of the work called for by the drawings and specifications. During the prosecution of the work, he shall make all necessary measurements to prevent misfitting in said work, and he shall be responsible therefor, and for the accurate construction of the entire work.

7.13 Dimensions of Existing Structures. Where the dimensions and locations of existing structures are of importance in the installation or connection of any part of the work, the Contractor shall verify such dimensions and locations in the field before the fabrication of any material or equipment which is dependent on the correctness of such information.

7.14 Work To Conform. During its progress and on its completion, the work shall conform truly to the lines, levels, and grades indicated on the Drawings or given by the Engineer and shall be built in a thoroughly substantial and workmanlike manner in strict accordance with the Drawings, Specifications and other Contract Documents and the directions given from time to time by the Engineer.

All work done without instructions having been given therefor by the Engineer, without proper lines or levels, or performed during the absence of the Engineer, will not be estimated or paid for except when such work is authorized by the Engineer in writing. Work so done may be ordered, uncovered or taken down, removed, and replaced at the Contractor's expense.

7.15 Pipe Location. Pipelines will be located substantially as indicated on the Drawings, but the Owner reserves the right, acting through the Engineer, to make such modifications in location as may be found desirable to avoid interference with existing structures or for other reasons.

7.16 Limits of Normal Excavation. In determining the quantities of excavation to which unit prices shall apply, the limits of normal width and depth of excavation shall be as described at the description of the appropriate items (i.e., Class "A" Trench, Class "B" Trench)) unless other limits are indicated on the Drawings or specified.

7.17 Computation of Quantities. For estimating quantities in which the computation of areas by geometric methods would be comparatively laborious, it is agreed that the planimeter shall be considered an instrument of precision adapted to the measurement of such areas.

If is further agreed that the computation of the volume of prismoids shall be by the method of average end areas.

7.18 Planning and Progress Schedules. Before starting the work and from time to time during its progress, as the Engineer may request, the Contractor shall submit to the Engineer a written description of the methods he plans to use in doing the work and the various steps he intends to take.

Within 15 days after the date of formal execution of the Agreement, the Contractor shall prepare and submit to the Engineer (a) a written schedule fixing the dates on which additional drawings, if any, will be needed by the Contractor and (b) a written schedule fixing the respective dates for the start and completion of various parts of the work. Each such schedule shall be subject to review, approval and change by the Engineer from time to time during the progress of the work.

7.19 Precautions During Adverse Weather. During adverse weather and against the possibility thereof, the Contractor shall take all necessary precautions so that the work may be properly done and satisfactory in all respects. When required, protection shall be provided by use of tarpaulins, wood and building-paper shelters, or other approved means.

During cold weather, materials shall be preheated, if required, and the materials and adjacent structure into which they are to be incorporated shall be made and kept sufficiently warm so that a proper bond will take place and a proper curing, aging, or drying will result. Protected spaces shall be artificially heated by approved means which will result in a moist or a dry atmosphere according to the particular requirements of the work being protected. Ingredients for concrete and mortar shall be sufficiently heated so that the mixture will be warm throughout when used.

The Engineer may suspend construction operations at any time when, in his sole judgment, the conditions are unsuitable or the proper precautions are not being taken, whatever the weather may be, in any season.

7.20 Temporary Heat. If temporary heat is required for the protection of the work, the Contractor shall provide and install approved heating apparatus, shall provide adequate and proper fuel, and shall maintain heat as required.

Temporary heating apparatus shall be installed and operated in such manner that finished work will not be damaged thereby.

7.21 Electrical Energy. The Contractor shall make all necessary applications and arrangements and pay all fees and charges for electrical energy for power and light necessary for the proper completion of the work and during its entire progress. The Contractor shall provide and pay for all temporary wiring, switches, connections, and meters.

The Contractor shall provide sufficient electric lighting so that all work may be done in a workmanlike manner when there is not sufficient daylight.

7.22 Protection Of Utilities and Properties. The Contractor's attention is directed to the location of underground utilities in the existing roadways, parking areas, and unpaved areas of the project site.

The Contract Drawings indicate the approximate locations, in plan view, of the existing subsurface utilities in the vicinity of the work. These locations are based on limited information of record and as such, should not be construed as exact locations. It is the Contractor's responsibility to determine the exact location of underground utilities.

Whatever measures are necessary to protect these lines during the work shall be included in the contract unit price for the various items involved.

In case of damage to utilities, the Contractor shall promptly notify the Owner and shall, if requested, furnish manpower under the Owner's direction in getting access to the utility. Pipes or other structures damaged by the operation of the Contractor may be repaired by the Owner, either the municipality or the utility company. The cost of such repairs shall be borne by the Contractor without compensation therefor.

The work to be done under this Contract may necessitate changes in the properties of utility companies or the municipality hereinbefore listed. Immediately after executing the contract, the Contractor shall confer with the Owners of all utilities in order that relocations of mains or services may be made at times consistent with operations of this Contract.

7.23 Protection of Existing Utilities and Structures (Supplementing Subsection 7.13). Excavation and backfill operations shall be carried out in a manner that will prevent cave-in of excavation or the undermining, damage or disturbing of existing utilities and structures, or of new work.

Any excavations improperly backfilled or where settlement occurs shall be reopened to the depth required, then refilled with new materials and compacted, and the surface restored to the required grade and condition, at no additional expense to the Owner.

Any damage due to excavation, backfilling or settlement of the backfill, or injury to persons or damage to property occurring as a result of such damage, shall be the responsibility of the Contractor. All costs to repair such damage, in a manner satisfactory to the Owner, shall be borne by the Contractor at no additional expense to the Owner.

Where existing subsurface utilities or, other facilities adjacent to or crossing through the excavation require temporary support or protection, such temporary support or protection shall be satisfactorily provided by the Contractor, at no additional expense to the Owner. All necessary measures shall be taken by the Contractor to prevent lateral movement or settlement of existing facilities or of work in progress.

The plans indicate the approximate location of existing subsurface utilities in the vicinity of the work and the bidders are advised to verify this information, as its accuracy and completeness are not guaranteed by the Owner.

7.24 Tidal Influences on Job Progress. The Contractor shall take note of the relationship of the elevation of the proposed work with respect to tidal levels. The mean high tide level for the harbor is approximately elevation 2.5 mean sea level (M.S.L.). Since this is a mean or average value of high tide there will be tides higher (and lower) resulting from seasonal and lunar variations.

Delays in project progress resulting from tidal conditiosn will not be cause for claims for additional compensation.

TECHNICAL SPECIFICATIONS

Division 8

100 Excavation and Placement of On-Site Material

1.0 Description

1.1 This work shall consist of the excavation, stockpiling and/or placement of on-site material and the furnishing of all plant, labor, materials and equipment to accomplish the above as shown on the Drawings, specified under Item 150 and/or as ordered by the Engineer.

1.2 This work shall also consist of the abandonement of existing monitoring wells as detailed in Sections 100.3.5 and 100.3.6 below.

2.0 Materials -

3.0 Construction Methods

3.1 Excavation of any material shall be done in such a manner as to prevent the inadvertent loss of any soil particles into the surrounding environment (i.e., via erosion or fugitive dust emissions).

3.2 Stockpiling of any material shall be done only at locations and times approved by the Engineer. All stockpiles shall be covered with plastic to prevent loss of soil particles.

3.3 All excavated material shall remain on the project site.

3.4 All material placed shall be compacted to a range between 90% to 95% of maximum dry density.

3.5 Included under this Item will be the abandonment of existing monitoring wells numbered 1, 1A and 8, as located in the Drawings. Well abandonment will be accomplished by cutting the well casing and riser pipes to be flush with the existing ground surface, and then filling the remaining 2½" PVC well with concrete. There will be no additional compensation for well abandonment.

3.6 It shall be the responsibility of the Contractor to protect from damage all existing monitoring wells not be abandoned as specified above. If any existing wells designated for protection are damaged by the Contractor, they shall be repaired by the Contractor as directed by the Engineer at no additional cost to the Owner.

4.0 Method of Measurement

4.1 The quantity of excavation and placement of on-site material shall be measured by the cubic yard in-place prior to excavation.

4.2 Work eligible for payment under this Item shall be limited to excavation required between the piling and the "seawall" and areas required to be excavated prior to placement of the base course and subsequently the hydraulic asphalt cement cap and other areas so ordered by the Engineer.

4.3 No payment will be made for well abandonment since this work is incidental to earth excavation and filling.

5.0 Basis of Payment

5.1 The contract unit price per cubic yard shall include all excavation, compaction, placement, erosion prevention and stockpiling costs associated with excavation eligible under this Item.

Pay Item and Unit:

100 Excavation and Placement of On-Site Material	cubic yard

120 Base Course for Hydraulic Asphalt Cap

1.0 Description

1.1 The base course material shall be placed on areas requiring hydraulic asphalt concrete pavement as shown on the plans or as directed by the Engineer.

2.0 Materials

2.1 Borrow material shall consist of material that is composed of hard, strong and durable particles, and shall be free draining and resistant to rutting when construction wheel loads are applied. The maximum size of stone in the borrow material shall be 3 inches in its largest dimension.

3.0 Construction Methods

3.1 The borrow material shall be spread in layers upon the subgrade from self-spreading vehicles or with power graders or other approved types. There are areas within the project where self-spreading vehicles or power graders cannot be used and spreading and compacting by hand methods will be required. The borrow material shall be spread in layers not more than 6 inches thick, compacted measure, all layers shall be compacted to not less than 90 percent of the maximum dry density of the material as determined by the Standard AASHO Test Designation T99 compaction test Method C at optimum moisture content as determined by the Engineer.

Any stone with a dimension greater than that permitted for the type of material specified shall be removed from the base before the material is compacted. Compaction shall continue until the surface is even and true to the proposed lines and grades. Any specific area of base which, after being rolled, does not form a satisfactory, solid, stable foundation, shall be removed, replaced and recompacted by the Contractor without extra compensation.

3.2 The borrow material base shall have a minimum total compacted thickness of six (6) inches.

4.0 Method of Measurement

4.1 Borrow material used for base course will be measured in place or any other method as determined acceptable by the Engineer.

5.0 Basis of Payment

5.1 Borrow material for base course will be paid for at the contract unit price per cubic yard complete in place.

Pay Item and Unit:

120 Borrow Material For Hydraulic Asphalt Cap	cubic yard

150 Steel Sheet Piling

1.0 Description

1.1 The work covered under this Item consists of furnishing all plant, equipment, labor, and materials for the installation of all steel sheet piling to the lines and grades indicated on the plans or as given herein. All sheet piles shall be ordered so that no splices will be required.

1.2 It should be noted that there are various sheet piling/waterline and sheet piling/drainline crossings along the proposed wall line. The furnishing of all plant, equipment, labor, and materials for the completion of these items shall be covered under other items suitably titled (Item Numbers 1.51 and 1.52).

1.3 The minimum elevation of the bottom of the piles as driven shall be -2.50 feet, mean sea level datum. Any estimated lengths of piling shown or referred to in the Contract Documents are for information only. It shall be the Contractor's responsibility to make due allowances for tip elevation variations, cut off of damaged butts or other variations.

1.4 It is the intent of the project to place the sheet piling within 3 to 4 feet of the back (shore side) of the existing stone slope protection ("seawall"). It is also the intent of the project to excavate all existing material between the sheet piling and the "seawall" to an average depth of 2 to 3 feet below existing grade and place this excavated material within the "cell" created by the proposed sheet piling wall on three sides and the Aerovox building on the fourth side. In order to facilitate the safe and efficient movement of existing material and the driving of the piles, this excavation shall be done prior to the driving of the piling. This shall be scheduled in such a manner that the area can be excavated then sheet piling driven along the same length within 24 or 48 hours. All excavated material shall be immediately placed and compacted on the inside of the sheet piling wall. In the case of the material first excavated, it shall be stockpiled and covered with plastic to prevent any erosion of this soil. Compensation for excavation and placement of excavated material shall be covered under Item 100 Excavation and Placement of On-Site Material.

1.5 Quality Assurance

1.51 Qualifications of Workmen

1.51.1 Provide at least one person at all times who shall be thoroughly trained and experienced in the skills required, with a minimum of 10 years of responsible experience in the installation of steel sheet pile bulkheads.

1.52 Submittals

1.52.1 Certify that materials are new and meet or exceed Specification requirements by submitting three notarized copies of chemical and physical test results for each rolling of steel.

150 Steel Sheet Piling (con't.)

1.52.2 Submit three copies of planned installation layout including location, control, typical sheet sections, and details of all fabricated accessories.

1.52.3 Submit three copies of construction methods and equipment, including the following:

a. Sequence of construction
b. Manufacturers' brochures on pile hammers, energy source for hammers, and accessories.

2.0 Materials

2.1 Steel for piling shall be hot rolled conforming to ASTM A690 - 81A (Marine Quality).

2.2 Interlocks: Shall be of thumb and finger design so as to effect an efficient water stop seal and shall be coated prior to installation with Koppers #50 cold applied Bitumastic or approved equal to insure watertight integrity.

2.3 Steel sheet piling shall have a minimum section modulus of 5.4 cubic inches.

2.4 Steel sheet piling shall be furnished bare of additional coating, except as noted at Section 2.2.

2.5 Piles shall be ordered so that splicing will not be required.

2.6 Steel sheet piling shall be "BZ-7" as manufactured by ARBED or approved equal.

3.0 Construction Methods

3.1 General

3.1.1 Piles shall be carefully located as shown on the Drawings and driven in a plumb position, each pile interlocked with adjoining piles for its entire length so as to form a continuous diaphragm throughout the length of each run of wall. The Constractor shall drive all piles as true to line as practicable and shall provide suitable temporary wales or guide structures and as otherwise specified to insure that the piles are driven in correct alignment. All piles shall be driven to depths shown on the Drawings, as specified or as otherwise directed by the Engineer, and shall extend to the elevations indicated for the tops of piles. A tolerance of 6 inches from the indicated top elevation will be permitted for piles when prior approval is received by the Engineer.

3.1.2 Piles shall be driven by approved methods in such a manner so as not to subject the piles to serious injury and to insure perfect

interlocking throughout the lengths of the piles. During driving, the bottom end of any pile shall not lead the adjacent pile by more than three feet.

Piles hammers shall be of suitable sizes and types and shall be maintained in proper alignment during driving operations by use of suitable leads or by guides attached to the hammer. A protecting cap of approved design shall be employed in driving, when required, to prevent damage to the tops of piles. All piles shall be driven without the aid of a water jet unless otherwise authorized by the Engineer. Adequate precautions shall be taken to insure that piles are driven as nearly plumb as practicable.

Any sheets found out of interlock shall be pulled and replaced with other sheets at the Contractor's expense. The re-driven sheets shall be checked in the same manner as previously stated. If at any time the forward or leading edge of the piling wall is found to be out of plumb in the plane of the wall, the piles already assembled and partly driven shall be driven to full depth and the Contractor shall provide and drive tapered piles or takeother corrective measures to insure the plumbness of succeeding piles. The maximum permissible taper for any tapered pile will be one-eighth of an inch per foot of length. Each run of piling shall be driven to grade progressively from the start. Piles driven out of interlock with adjacent piles or otherwise injured shall be removed and replaced by new piles at the Contractor's expense. Piles shall not be driven within 100 feet of concrete less than 7 days old unless otherwise authorized in writing by the Engineer.

3.1.3 Piles shall be driven to their required depths or elevations and portions which extend above the specified top elevation shall be cut off at the specified top elevations or within 6 inches of the specified top elevation as shown on the Drawings (an even top must be effected).

3.1.4 All piles, which because of damaged heads have been cut off to permit further driving and are then too short to reach final grade and/or piles which are too short to reach required depth, shall be replaced with new piles.

4.0 Method of Measurement

4.1 Sheet piling will be measured for payment on the basis of the area of the piling wall acceptably placed as determined from the lengths of piles driven below the cut-off elevation and the length of piling structure shown on the Drawings, including any additions thereto resulting from changes in design or alignment. The length of each pile driven will be measured to be nearest tenth of a linear foot. Unless otherwise specified, when piles are directed to be cut off, that portion cut off will be measured for payment on the basis of its areas as determined from the actual length cut off; provided that this length is no greater than the difference between the total length shown on the plans for that location and the driven portion below cut off. No deduction will be made for holes cut for drains and utilities, in computing the area of steel sheet pile structures.

5.0 Basis of Payment

5.1 Payment for steel sheet piling in place below cut off elevation will be made at the Contract price per square foot for Item 150; which price shall include all costs of furnishing, driving, cutting holes, protective coating, and all other material and work incidental thereto, excluding that covered under Items 100, 151 and 153.

5.2 Pulled Piles: Piles which are directed to be pulled and found to be in good condition, will be paid for at the Contract price for furnishing and driving the pile in its original position plus an equal amount for the cost of pulling. Such pulled piles when redriven will be paid for at 50 percent of the applicable Contract unit price for steel sheet piling, for that portion of the pile redriven below cut off elevation; which price shall constitute payment for redriving only. The cost of furnishing, previous driving, and pulling the piles will have been paid for as specified above. When piles are pulled and found to be damaged, no payment will be made for originally furnishing and driving such piles, nor for the operation of pulling. Piles replacing damaged piles will be paid for at the Contract unit prices for the lengths driven.

Pay Item and Unit:

150 Steel Sheet Piling	square foot

151 Sheet Piling/Waterline Crossings

1.0 Description

1.1 Work under this item shall cover the completion of the cutoff wall at crossings of waterlines such that there is continuity in the finished product.

1.2 This work shall be completed in such a manner that there is no interruption of water service to the Aerovox building.

1.3 The locations of underground utilities as shown are approximate only. (See Section 7.22). It is the Contractor's responsibility to determine exact locations prior to proceeding.

2.0 Materials

2.1 All materials used in completing this work shall be compatible with the subsurface environment and with the sheet piling. Any material shall be such that it provides an effective permeability no greater than 1.0×10^{-7} cm/sec.

3.0 Construction Methods

3.1 The construction of these crossings shall be done in such a manner that the following conditions are met:

a. The waterlines are not damaged thereby being no interruption of water service.

b. The base of the piling/cutoff wall be consistently at elevation -2.5 feet mean sea level.

c. The crossing be completed such that the permeability be no greater than 1×10^{-7} cm/sec.

d. The disruption of the surrounding ground be minimized.

3.2 The method of crossing will consist of driving sheet piling to within a certain distance either side of the waterline and then excavating a trench to elevation -2.50 MSL and backfilling with concrete to the surface.

4.0 Method of Measurement

4.1 The sheet piling/waterline crossings shall be measured by the number of crossings completed in place, including the sewer line crossing shown on the Drawings near the southeast corner of the Aerovox building.

5.0 Basis of Payment

5.1 Compensation under this Item shall be full payment for all labor, plant, materials, and equipment required to complete the waterline crossings and shall include all required excavation and backfill.

Pay Item and Unit:

151 Sheet Piling/Waterline Crossing — each

152 Sheet Piling/Drain Line Crossings

1.0 Description

1.1 Work under this Item shall consist of all construction necessary to insure the continuity of drain lines through the sheet piling.

2.0 Materials

2.1 All materials shall meet the provisions of Section 151.2.1 of this specification.

3.0 Construction Methods

The provisions of Section 151.3.1 b, c and d and 151.3.2 shall be met.

4.0 Method of Measurement

4.1 The sheet piling/drain line crossings shall be measured by the number of crossings complete in place.

5.0 Basis of Payment

5.1 Compensation under this item shall be full payment for all labor, plant, materials and equipment required to complete the waterline crossings and shall include all associated excavation and backfill.

Pay Item and Unit:

152 Sheet Piling/Drain Line Crossings	each

155 Extension of Drainage Troughs

1.0 Description

1.1 Work covered under this Item shall consist of the extension of the existing drainage troughs in an easterly direction. The intent of this Item is to provide a defined path of flow and prevent the erosion of surface materials and to prevent infiltration of water within the trough the surrounding soils.

2.0 Materials

2.1 The trough extensions shall be reinforced precast concrete units as shown on the Contract Drawings and as manufactured by A.P. Rotondo and Sons or an approved equal (e.g. poured in place).

3.0 Construction Methods

3.1 The trough extensions shall be constructed on a clean sand base which shall be compacted to at least 90% of maximum dry density.

3.2 All joints in the troughs and at points where the asphalt cap butts up to the trough shall be completely sealed with a bitumastic or epoxy sealant as shown on the plans or as directed by the Engineer.

4.0 Method of Measurement

4.1 The "North" and "South" trough extensions shall each be measured as a separate unit complete in place.

5.0 Basis of Payment

5.1 Payment under this Item shall be full compensation for all plant, labor,materials and equipment required to extend each of the troughs.

Pay Items and Units:

155.1	Extension of Northerly Drainage Trough	lump sum
155.2	Extension of Southerly Drainage Trough	lump sum

170 Hydraulic Asphalt Concrete Pavement

1.0 Description

1.1 This type of pavement shall be composed of mineral aggregate, mineral filler and bituminous material. The pavement shall be constructed in one (1) two and one-half inch (2½") thick course as shown on the plans and as directed, on the prepared base in accordance with these specifications and in close conformity with the lines, grades, compacted thickness and typical cross section shown on the plans.

1.2 For determination of pavement density and permeability, samples for the full depth of the course being laid shall be taken from the mixture incorporated in the work after finishing operations have been completed and the pavement has cooled. The Contractor shall have suitable coring equipment available in order that 5 cores samples may be taken in locations as directed by the Engineer.

The bituminous mixture, labor and equipment for obtaining these samples in the field, the patching of the core holes, and the required testing of these samples shall be furnished without charge by the Contractor.

2.0 Materials

2.1 The hydraulic asphalt concrete shall be such that the final installed product shall have a permeability rate no greater than 1.0×10^{-7} cm/sec.

2.2 Job Mix Formula. The composition limits below are ranges of tolerance of materials in general. In order to obtain standard texture, density, and stability, the Contractor will furnish to the Engineer a specific job mix formula for the particular uniform combination of materials that will produce a permeability of the compacted asphalt concrete pavement of no greater than 1.0×10^{-7} cm/sec.

Standard Sieves	Percent Passing*
1"	100
3/4"	95 - 100
3/8"	72 - 85
No. 4	53 - 72
No. 8	40 - 60
No. 16	30 - 49
No. 30	22 - 39
No. 50	16 - 30
No. 100	11 - 22
No. 200	8 - 15

Asphalt cement, percent by weight of total mix shall be 6.0 - 8.5 percent.
* Percent by weight passing square opening sieves.

170 Hydraulic Asphalt Concrete Pavement (con't.)

2.3 Mineral Aggregate. All mineral aggregate shall consist of clean, inert material, which is sound in nature and demonstrates good adhesion characteristics in the presence of water. Some portion of the coarse aggregate shall be crushed or angular.

2.4 Mineral Filler. Mineral filler shall consist of approved Portland Cement, Limestone dust, hydrated lime, stone float or stone dust. Stone dust shall be produced from crushed ledge stone and shall be the product of a secondary crusher so processed as to deliver a product of uniform grading. Mineral filler shall completely pass a No. 50 sieve and at least 65% shall pass a No. 200 sieve.

2.5 Bituminous Materials. The asphalt for the mixture shall be a AC-20 viscosity grade and shall conform to the requirements of M3.01.0 of the Massachusetts Department of Public Works Standard Specifications for Highways and Bridges, latest edition. An approved anti-stripping additive conforming to M.3.10.0 of the Mass. D.P.W. Specifications shall be added to the asphalt cement, as required.

2.6 Asphalt Emulsion. This material shall conform to the requirements of M3.03.0 of the Mass. D.P.W. Specifications.

3.0 Construction Method

3.1 The hydraulic asphalt concrete pavement shall be a single course 2½ inches thick after compaction and placed on a previously placed base.

3.2 The material shall be placed according to established construction practices. Due to the characteristics of the project site, the placement and compaction of pavement in some areas will have to be by hand while in others it can be by mechanical means. In any event, construction techniques shall be employed such that the following general conditions are met:

a. The permeability rate of the finished product is no greater than 1×10^{-7} cm/sec.

b. The compacted thickness is no less than 2½" thick.

c. The surface of the mixture after compaction shall be smooth and true to the line and grade shown on the plans.

d. The mix shall be placed in such a manner with respect to its temperature that the finished product shall be homogenous and continuous throughout the paved area. Special care shall be taken at any field joint to insure continuity (i.e. bitumen seals).

4.0 Method of Measurement

4.1 Hydraulic asphalt concrete pavement shall be measured by the square

yard complete in place and approved by the Engineer.

5.0 Basis of Payment

5.1 The quantity of hydraulic asphalt concrete pavement, determined as provided above, will be paid for at the contract unit price and shall be full compensation for all plant, materials, equipment, and labor necessary for the proper installation of the pavement.

5.2 Material, labor and placement of the base course will be compensated under Item 120.

Pay Item and Unit:

170 Hydraulic Asphalt Concrete Pavement	square yard

201 Manhole

1.0 Description

1.1 This work shall consist of the construction and/or furnishing and installation of a precast concrete manhole complete with frame and cover, access ladders and service connections.

2.0 Materials

2.1 The precast concrete storm drain manhole (including but not limited to base sections, riser sections, cone sections and slab reducers) shall be as manufactured by Raynham Precast, Inc., or approved equal.

2.2 Frame and cover shall be catalog number LK110A or as noted on the plans as manufactured by Lebaron or approved equal.

2.3 Where frame and cover has to be adjusted to finish grade, the brick and mortar shall meet the provisions of subsections 4.05.2 and M4.02.15 respectively, of the Mass. DPW Specifications.

3.0 Construction Methods

3.1 The manhole shall be built to the lines, grades, dimensions and design shown on the Contract Drawings and in accordance with these specifications.

3.2 Frame castings shall be set in full mortar beds true to the lines and grades as directed.

3.3 Cement concrete collars shall be placed around the casting after the final setting as directed by the Engineer.

3.4 The manhole shall be set on a minimum thickness of 6" of a compacted crushed stone base.

4.0 Method of Measurement

4.1 The manhole will be measured as a complete unit.

4.2 Transportation, delivery and installation will be included in the contract unit price for each structure.

5.0 Basis of Payment

5.1 The accepted manhole will be paid for at the contract lump sum price, complete in place.

5.2 Payment for concrete collars and castings shall be included in the contract unit price for the structure, including the adjusting of castings to proper grades.

201 Manhole (con't.)

5.3 Excavation and backfill will be included in the contract lump sum price.

Pay Item and Unit:

201 Manhole	each

202 Aluminum Spiral Pipe

1.0 Description

1.1 This Item shall cover the furnishing of all materials and installation (excavation and backfill included) of aluminum spiral drainage pipe.

2.0 Materials

2.1 Type - Pipes shall be sized in conformance with the site plans and shall be aluminum spiral pipe, unless specified otherwise. All aluminum spiral pipe shall be in conformance with ASTM Standard B209 and constructed with Alclad 3004-434 sheet or approved equal. Additional cladding with Alloy 7072 is required for corrosion protection.

2.2 Coupling bands for all aluminum spiral pipes shall be 12" wide, 2-piece lap-type couplings.

2.3 Pipe Strength - All drain pipes under paved areas must have a minimum crushing strength equal to 2000 lbs x pipe diameter (pipe diameter in feet). Pipe strengths are to be determined using the three-edge bearing method (ASTM C301, C497, C500). Prior to installation, one specimen length of each size pipe shall be furnished by the Contractor for testing. Testing is to be conducted on a 1 foot segment of the sample, and the sample must develop the previously specified crushing strength. If failure occurs, a retest on two additional samples will be required at the Contractor's expense. The pipe will be considered acceptable if it passes both retests. Additional testing will be required by the Contractor if requested by the inspecting Engineer.

All pipes delivered to the site will be subject to a visual inspection in addition to the above-specified strength test. Pipes will be subject to rejection if the field engineer determines that they do not meet all specified requirements.

3.0 Construction Methods

3.1 All pipes shall be installed in accordance with the recommendations of the manufacturer, unless stated otherwise by these specifications.

3.2 Pipes shall be laid in the locations and at the depths specified on the site plans or as approved by the site engineer.

3.3 All pipe shall be kept clean and free of debris and loose excavation.

3.4 Upon completion of pipe installation, all lines are to be inspected and cleaned of all debris.

4.0 Method of Measurement

4.1 Pipe shall be measured along the center line of the pipe to the

nearest foot of pipe installed complete in place.

5.0 Basis of Payment

5.1 Payment under this item shall be full compensation for all plant, labor, equipment materials (including excavation and backfill) required for the proper installation of the drainlines as shown on the plans or as ordered by the Engineer.

Pay Item and Unit:

202 12" Aluminum Spiral Pipe	linear foot

665 Chain Link Fence Removed and Reset

1.0 Description

1.1 This work shall consist of removing the existing chain link fence and resetting it in accordance with the specifications and in conformity with its present location.

1.2 An alternate to this item will include Bid Item 665.3 for the removal of the existing chain link fence and replacement with a new chain link fence and posts.

2.0 Materials

2.1 The materials removed shall be utilized in the fence for resetting. Any materials missing, damaged or lost during or subsequent to removal shall be replaced by the Contractor without compensation. All new material required shall be equal in quality and design to the materials in the present fence.

3.0 Construction Requirements

3.1 The present fence together with all appurtenances shall be carefully removed and satisfactorily stored and protected until required for resetting. Any old post holes shall be backfilled with suitable material and properly compacted.

3.2 Fences shall be reset plumb on the line and grade as required and shall conform to the original fence line. Backfilling around the posts shall be completed by using suitable material compacted to the Engineer's satisfaction. If the fence posts were originally set in concrete bases, they shall be reset in their new locations in concrete bases, conforming to Mass. DPW Specification M4.02.00 for Class A concrete cement.

4.0 Method of Measurement

4.1 Chain link fence to be removed and reset will be measured in the original position from outside along the top of the fence for each continuous run. All fence will be measured by the linear foot.

4.2 New chain link fence will be measured by the linear foot as in the original position from the outside and along the top of the fence for each continuous run.

5.0 Basis of Payment

5.1 Removing and resetting fences will be paid for at the contract unit price per linear foot, complete in their final position, which price will include the concrete fence post bases as needed.

5.2 New chain link fence will be paid for at the contract unit price per linear foot complete in its final position which price shall include the removal and disposal of the existing fence and installation of concrete fence post bases as needed.

Pay item and unit:

665.2	Chain Link Fence, Remove and Reset	linear foot
665.3	New Chain Link Fence (Alternate Bid Item)	linear foot

984 Stone and Stone Chips

1.0 Description

1.1 The work shall consist of furnishing and placing or removing and replacing stone for slope protection as shown on the plans, as herein specified and as directed.

2.0 Materials

2.1 The stone shall consist of granite quarry stone or stone of approved quality as regards strength and durability and shall be angular in shape. No boulders will be accepted on this work and all stone shall have at least three (3) reasonably flat faces to enable the stone to be property locked together to form a compact mass.

2.1.1 The stone used shall consist of stone weighing between two hundred (200) pounds and one thousand five hundred (1,500) pounds.

2.2 Stone chips shall consist of sound, durable granite or other approved stone angular in shape ranging in size from six (6) inches to twelve (12) inches in their greatest dimension.

3.0 Construction Requirements

3.1 All stone shall be laid by a competent operator and shall be laid as to ensure a reasonably tight interlocking of each stone having a minimum of voids. The voids between stones shall be chinked with stone chips.

3.2 In placing or removing and placing the stone, the Contractor may be required to lay planking or other protection satisfactory to the Engineer over structures and other features in order to protect same from damage. The Constractor shall make good, to the satisfaction of the Engineer, all damage to fences, roads, grounds or structures at his own expense.

3.3 The Contractor shall conduct his operations so as to minimize exposure of unprotected earth bank to wave action and rainfall runoff.

4.0 Method of Measurement

4.1 The stone and stone chips will be measured complete in place by the square yard on the surface of the slope as constructed.

5.0 Basis of Payment

5.1 The stone and stone chips placed will be paid for at the contract unit

price per square yard complete in place, which item shall include the placing of existing stone and the placing of stone delivered to the site.

Pay Item and Unit:

984	Stone and Stone Chips Complete In Place	square yard

PROJECT SAFETY PLAN AND SECURITY

Division 9

PROJECT SAFETY PLAN AND SECURITY

Division 9

9.1 General. The objective of the Project is to install a sheet pile cutoff wall and hydraulic asphalt concrete surface cap to contain PCB-contaminated soils. The Project Safety Plan outlined in this Section describes the general safety procedures and precautions to be followed in order to: (1) protect the people working in the contaminated area; and (2) to minimize any off-site transport of contaminants via persons, clothing or equipment.

9.2 Applicability. The provisions of the Safety Plan are mandatory for all personnel working on the Project and for all visitors to the Project site. No persons will be allowed to enter or leave the working area without complying with the personnel safety procedures, including decontamination, set forth herein.

9.3 Responsibility for Compliance with Safety Plan. The Contractor will be required at all times to comply with the provisions of the Safety Plan. The Engineer's Project Manager on-site during construction shall serve as the Project Safety Officer. The Contractor shall designate one or more of its employees as responsible for ensuring that all prescribed safety procedures are followed by the Contractor, and at least one person so designated shall be on-site at all times during construction. The Engineer's Project Safety Officer will advise the Contractor as to whether its activities are in compliance with the Safety Plan, and shall have authority to amend and interpret the Safety Plan as deemed necessary as the work proceeds.

9.4 Training. Prior to the start of any on-site construction activity, all Contractor personnel assigned to the Project shall attend a training session in which the required safety and security procedures for the Project will be explained. The training session will be given by the Engineer. All Contractor or Subcontractor (if any) personnel must be so instructed as to the required safety and security measures before being allowed to work on the Project. Authorized visitors to the site are required to comply with the Safety Plan, but need not be instructed as to all its provisions.

9.5 Work Areas. The Engineer will clearly delineate and identify work areas in the field and will limit equipment, operators and personnel to the three areas defined below and located on Figure 9-1.

9.51 Controlled Area (Contaminated). The Controlled Area, as indicated in Figure 9-1, includes: (1) the unpaved area at the eastern end of the property bordering on the Acushnet River; and (2) the unpaved 8-foot wide strip running alongside the drainage trough on the north side of the Aerovox building. While working within the Controlled Area, all personnel are required to wear protective clothing and, if PCB-contaminated soils are exposed and being handled or moved, respiratory protection.

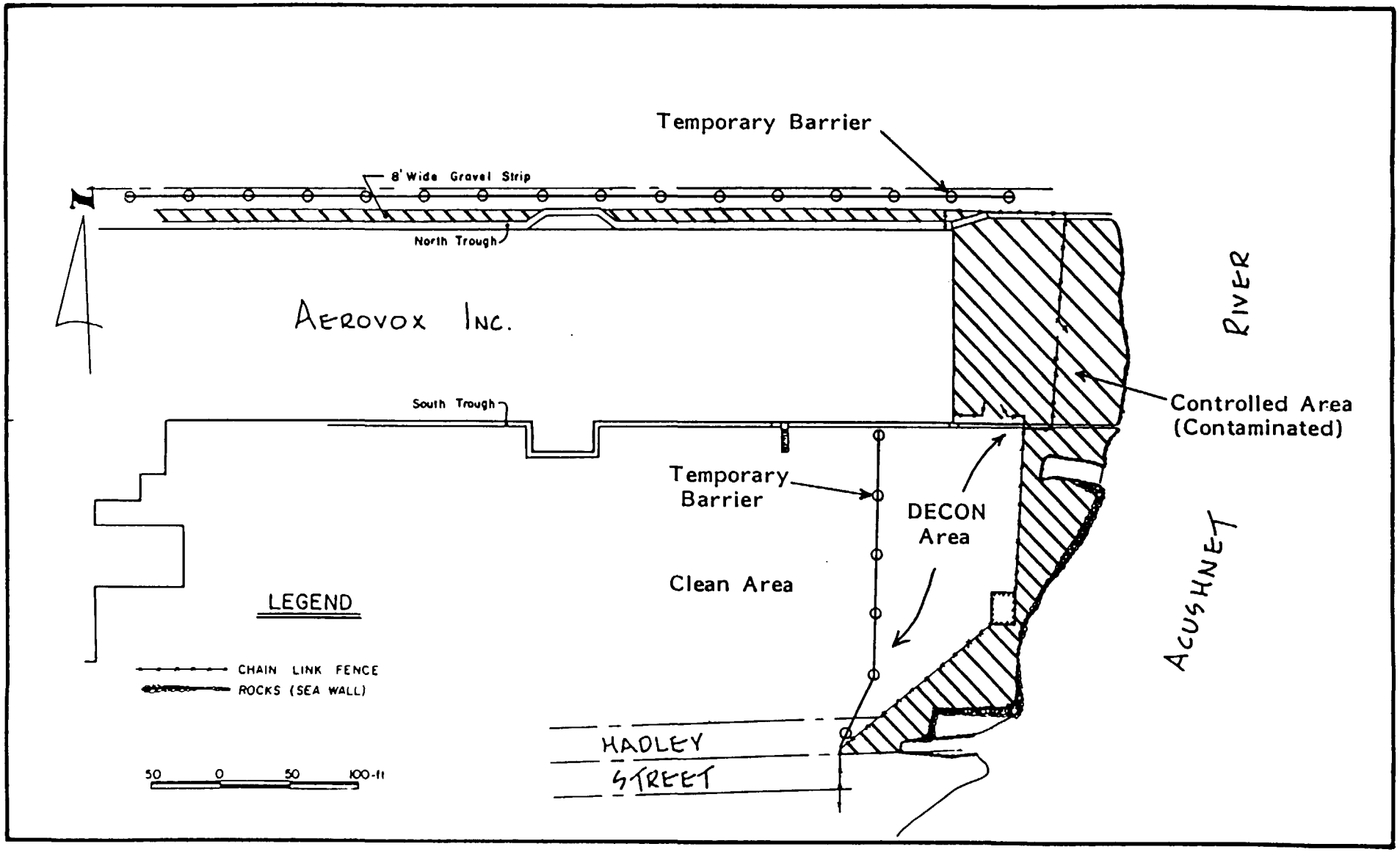

Temporary Barrier
8' Wide Gravel Strip
North Trough
AEROVOX INC.
South Trough
Temporary Barrier
DECON Area
Clean Area
Controlled Area (Contaminated)
RIVER
ACUSHNET
LEGEND
CHAIN LINK FENCE
ROCKS (SEA WALL)
50 0 50 100-ft
HADLEY STREET

FIGURE 9-1

Note: All personnel shall be required to enter and exit the Controlled Area by passing through the Decontamination Area. This means that all entry into all of the contaminated areas will be through the access control points to be established at the eastern end of the large parking lot on the south side of the Aerovox building. There will be no direct personnel entry from Belleville Avenue to the 8-foot wide gravel strip on the north side of the building.

The Controlled Area will be clearly delineated by means of a temporary barrier with adequate warning signs to be erected by the Contractor prior to the start of construction work. The temporary barrier may be constructed of traffic control drums or other suitable materials sufficient to minimize any inadvertent entry into the Controlled Area.

The warning signs for the Controlled Area shall be of an appropriate size and shall be placed in the locations indicated on Figure 9-1. The signs shall be in both English and Portuguese and in block letters shall state the following:

DANGER
NO ADMITTANCE

THIS AREA CONTAINS
HAZARDOUS MATERIAL (PCBs)

9.52 Decontamination (DECON) Area (Contaminated). This area is the area between the Controlled Area and the Clean Area, and its purpose is to provide for the decontamination of personnel, equipment and vehicles prior to entering the Clean Area. All necessary decontamination equipment will be located in the DECON Area.

9.53 Clean Area (Uncontaminated). The Clean Area is the remainder of the site and is used as the entry area into the Project site, the exit for decontaminated personnel, equipment and vehicles; and the storage area for clean site safety and work equipment and materials.

9.6 Required Protective Clothing and Equipment. All persons entering the Project site through the Clean Area will be required to wear the following protective clothing and equipment:

1. Chemical-resistant disposable coveralls over normal work clothes (Tyveks or equivalent).

2. Rubber (washable) work boots and gloves.

3. Hard-hats.

When performing work involving uncovering, excavation and/or movement of PCB-contaminated soils, all personnel in the work area will be required to wear full facepiece respirators (Mine Safety Appliances "Ultra-Turn" Type GMA-H or equivalent) equipped with cartridges and filters necessary

to provide protection against organic vapors, dusts and mists (Mine Safety Appliances Nos. 464029, TC 23C-155 or equivalent).

The Contractor shall be required to provide the necessary protective equipment at no cost to the Owner. The Engineer's Project Safety Officer shall have authority to approve or reject the protective equipment to be used. Personnel using respirators shall first be instructed by the Project Safety Officer as to the proper use of the respirators, and shall also be tested by the Safety Officer for proper respirator fit.

Note: Hair styles and beards that interfere with an employee's ability to effectively use the required personal safety equipment, including respirators, shall not be permitted.

9.61 Site Operations Requiring Respirator Protection. During the site operations listed below, the Contractor's personnel shall be required to use respirators:

1. Initial placement of clean cover material over PCB-contaminated soils.

2. Any excavation and movement of PCB-contaminated material.

9.7 Decontamination Procedures. Prior to leaving the contaminated areas of the site, all personnel, equipment and vehicles must be decontaminated. The decontamination procedures to be followed shall be as described below. All decontamination will be done in the DECON area.

9.71 Vehicle Decontamination. Vehicles will be decontaminated by using a portable steam generator to apply steam, prior to wiping the surface being cleaned with absorbent paper or cloth. Vehicle cleaning will be done so as to minimize rinsate runoff, and in a location such that any runoff generated will drain to the already contaminated soils. Cloths or paper towels used in vehicle decontamination will be disposed of in receptacles (heavy duty trash bags) placed in the DECON area specifically for that purpose.

9.72 Equipment Decontamination. The procedures for decontamination of hand-held equipment, such as shovels, used in the contaminated area will be as follows. In wash tubs (e.g., plastic children's swimming pools) provided by the Contractor specifically for equipment rinsing, the rinsing sequence to be followed to decontaminate equipment will be:

1. Initial rinsing with a 50/50 solution of methanol and water.

2. Secondary rinsing with an Alconox solution.

3. Final rinsing with water.

The rinsing solutions will be changed as needed, with spent solution being disposed of in the contaminated soil area.

9.73 Personnel Decontamination. The decontamination of personnel prior to their entering the Clean Area will be done as follows:

1. Reuseable rubber gloves and boots will be decontaminated in the same manner as outlined above for hand-held equipment. Workers are expected to assist each other in the scrubbing and rinsing of boots.

2. Boots and gloves are removed and stored on-site or in vehicles.

3. Disposable coveralls are removed and placed in receptacles for eventual disposal.

All personnel shall be instructed to immediately wash their faces and hands, and preferably take a full body shower, upon leaving the Project site.

9.8 Other Safety Restrictions. In addition to the provisions outlined above, the following additional safety restrictions shall be complied with at all times by the Contractor:

1. Smoking, eating, drinking and chewing gum or tobacco are permitted only in the designated Clean Area. Decontamination procedures must be followed in order to exit the contaminated area to the Clean Area.

2. To the extent practical, employees must avoid contact with contaminated soils by not kneeling or sitting on the ground, or placing equipment on contaminated surfaces.

3. Contact lenses are not allowed to be worn while working in the Project area. If eyeglasses need be worn, they should be of a design that will not interfere with the effectiveness of respiratory protective equipment.

4. Contractor employees are required to have a working knowledge of the site Safety Plan and procedures.

9.9 Site Security. The principal means of site security will be through the established security procedures of Aerovox Incorporated. No additional security measures are required of the Contractor under these specifications. The Contractor may, at his option and without cost to the Owner, provide a security guard to patrol the Project area and any Contractor equipment left on-site overnight. The Owner is not responsible for any Contractor equipment that is left on the job site overnight.

APPENDIX A

BORING LOGS

BORING / OBSERVATION WELL SUMMARY LOG

BORING No. 1, 1A

PROJECT Aerovox SHEET 1 OF 1

LOCATION New Bedford, MA CONTRACTOR D.L. Maher

CLIENT Aerovox DATE INSTALLED July 26, 1982

GHR FIELD ENGR. G. Hartley, G. Keegan

DEPTH	STRATA DESCRIPTIONS	INSTALLATION LOG	FIELD SAMPLING I.D. No.	DEPTH	SAMPLE DESCRIPTIONS	NOTES
	Brown, medium-coarse sand & gravel fill	Well #1A, 2" PVC	AV 54	0-2'	Soil	
			AV 55	2-4'	Soil	
			AV 56	4-6'	Soil	
5	6.0'					
	Brown, medium sand & gravel		AV 57	6-8'	Soil	
10	10.5'					
	Peat		AV 58	10-12'	Soil	
	13.0'	12.5'				
			AV 59	12-14'	Soil	
	Medium-coarse sand					
15	16.0'		AV 60	15-17	Soil	
	Stratified fine-medium sand, some silt					
	19.0'	Well #1, 2" PVC				
			AV 61	18-20'	Soil	
	Stratified fine sands with some silt & clay					
20			AV 62	22-24'	Soil	
	24.5'	24.5'				
25	Bottom of boring @ 24.5'					

NOTES:

Bentonite seals installed:
#1 12-14'
#1A 2-3'

GHR

ACCT. No. 2463

BORING / OBSERVATION WELL SUMMARY LOG

BORING No. 2,2A

PROJECT Aerovox SHEET 1 OF 1

LOCATION New Bedford, MA CONTRACTOR D.L. Maher

CLIENT Aerovox DATE INSTALLED July 27, 1982

GHR FIELD ENGR. G. Hartley, G. Keegan

DEPTH	STRATA DESCRIPTIONS	INSTALLATION LOG	FIELD SAMPLING I.D. No.	DEPTH	SAMPLE DESCRIPTIONS	NOTES
	Medium-coarse sand & gravel fill, with mud and pieces of peat	Well #2A, 2" PVC	AV 63	0-2'	Soil	
			AV 64	2-4'	Soil	
5			AV 65	4-6'	Soil	
		6.0'				
	8.0'		AV 66	6-8'	Soil; small sample, pos-	
					sibly washdown from above.	
	No sample		--	8-10'	No sample; sampler plugged	
	10.0'				with stone.	
10	Stratified fine-medium sands with little silt		AV 67	10-12'	Soil	
		Well #2, 2" PVC	AV 68	12-14'	Soil	
15						
	18.1'		AV 69	17-19'	Soil	
	Fine sand & silt					
20	21.0'	21.0'	AV 70	19-21'	Soil	
	Bottom of boring @ 21.0'	Bentonite seals installed: #2 7-9' #2A 1-2'				

NOTES:

GHR

ACCT. No. 2463

BORING / OBSERVATION WELL SUMMARY LOG

BORING No. 3, 3A

PROJECT Aerovox SHEET 1 OF 1

LOCATION New Bedford, MA CONTRACTOR D.L. Maher

CLIENT Aerovox DATE INSTALLED July 27, 1982

GHR FIELD ENGR. G. Hartley, G. Keegan

DEPTH	STRATA DESCRIPTIONS	INSTALLATION LOG	FIELD SAMPLING I.D. No.	DEPTH	SAMPLE DESCRIPTIONS	NOTES
	Sandy fill with stones & bricks (oily smell)	Well #3A 2" PVC	AV 71	0-2'	Soil	
			AV 72	2-4'	Soil	
5			AV 73	4-6'	Soil	
	6.5'	7.0'	AV 74	6-8'	Soil	
	Peat					
			AV 75	8-10'	Soil	
	9.3'					
10	Coarse sand & gravel 10.4'		AV 76	10-12'	Soil	
	Medium-fine sand	Well #3, 2" PVC				
			AV 77	12-14'	Soil	
15						
	17.0'		AV 78	17-19'	Soil	
	Fine sand with silt & clay 19.0'	19.0'				
20	Bottom of boring @ 19.0'	Bentonite seals installed: #3 8-9' #3A 1-2'				

NOTES:

GHR

ACCT. No. 2463

BORING / OBSERVATION WELL SUMMARY LOG

BORING No. 4, 4A

PROJECT Aerovox SHEET 1 OF 1

LOCATION New Bedford, MA CONTRACTOR D.L. Maher

CLIENT Aerovox DATE INSTALLED July 27, 1982

GHR FIELD ENGR. G. Hartley, G. Keegan

DEPTH	STRATA DESCRIPTIONS	INSTALLATION LOG	FIELD SAMPLING I.D. No.	DEPTH	SAMPLE DESCRIPTIONS	NOTES
	Mixed fill containing cinders, pieces of peat & brick, & tar-like material	Well #4A 2" PVC	AV 78	0-2'	Soil	
			AV 79	2-4'	Soil	
5			AV 80	4-6'	Soil	
	5.5'					
	Peat	6.5'	AV 81	6-8'	Soil	
	8.7'		AV 82	8-10'	Soil	
	Medium-coarse sand & gravel					
10			AV 83	10-12'	Soil	
		Well #4, 2" PVC				
15						
			AV 84	18-20'	Soil	
20	20.3'	20.0'				
	Bottom of boring @ 20.3'					
		Bentonite seals installed: #4 8-10' #4A 1-1.5'				

NOTES:

GHR

ACCT. No. 2463

BORING / OBSERVATION WELL SUMMARY LOG

BORING No. 5

PROJECT Aerovox SHEET 1 OF 1

LOCATION New Bedford, MA CONTRACTOR D.L. Maher

CLIENT Aerovox DATE INSTALLED July 28, 1982

GHR FIELD ENGR. G. Hartley, G. Keegan

DEPTH	STRATA DESCRIPTIONS	INSTALLATION LOG	FIELD SAMPLING I.D. No.	DEPTH	SAMPLE DESCRIPTIONS	NOTES
	Mixed sandy fill with pieces of brick		AV 85	0-2'	Soil	
			AV 86	2-4'	Soil	
		Bentonite seal 3-6'				
			AV 87	4-6'	Soil	
5	Yellow medium sand					
			AV 88	6-8'	Soil	
			AV 89	8-10'	Soil	
10	Stratified sand & gravel	Well #5, 2" PVC	AV 90	10-12'	Soil	
15			AV 91	15-17'	Soil	
	17.0'					
	Glacial till with clay fines		AV 92	17-19'	Soil	
	20.0'	19.5'				
20	Refusal @ 20.0' (No peat layer encountered)					

NOTES:

GHR

ACCT. No. 2463

BORING / OBSERVATION WELL SUMMARY LOG

BORING No. 6,6A

PROJECT Aerovox SHEET 1 OF 1

LOCATION New Bedford, MA CONTRACTOR D.L. Maher

CLIENT Aerovox DATE INSTALLED July 28, 1982

GHR FIELD ENGR. G. Hartley, G. Keegan

DEPTH	STRATA DESCRIPTIONS	INSTALLATION LOG	FIELD SAMPLING I.D. No.	DEPTH	SAMPLE DESCRIPTIONS	NOTES
	Black topsoil (0.2') over medium-coarse sand	Well #6A 2" PVC	AV 93	0-2'	Soil	
	5.5'		AV 94	2-4'	Soil	
			AV 95	4-6'	Soil	
	Stratified fine-medium sand & medium-coarse sand, with gravel & silty lenses		AV 96	6-8'	Soil	
10		10.0'	AV 97	8-10'	Soil	
			AV 98	12-14'	Soil	
			AV 99	14-16'	Soil	
20			AV 100	18-20'	Soil	
			AV 101	23-25'	Soil	
30			AV 102	28-30'	Soil	
		Well #6, 2" PVC				
			AV 103	33-35'	Soil	
			AV 104	36-38'	Soil	
40	40.0'					
	Dense sand & gravel with micacious silt					
	45.5'	45.0'	AV 105	44-45'	Soil	
	Refusal @ 45.5'					
50		Bentonite seals installed: #6 30-32' #6A 3-4'				

NOTES:

GHR

ACCT. No. 2463

BORING / OBSERVATION WELL SUMMARY LOG

BORING No. 7, 7A

PROJECT Aerovox SHEET 1 OF 1

LOCATION New Bedford, MA CONTRACTOR D.L. Maher

CLIENT Aerovox DATE INSTALLED July 29, 1982

GHR FIELD ENGR. G. Hartley, G. Keegan

DEPTH	STRATA DESCRIPTIONS	INSTALLATION LOG	FIELD SAMPLING I.D. No.	DEPTH	SAMPLE DESCRIPTIONS	NOTES
	Misc. fill containing bits of peat, rubber & glass	Well #7A 2" PVC	AV 106	0-2'	Soil	
	4.0'		AV 107	2-4'	Soil	
5	Black mud (small sample)		AV 108	4-8'	Small oily sample (core sampler penetrated quickly to 8')	
	8.0	8.5'				
	Fine sand & silt within peat layer 10.0'		AV 109	8-11'	Soil	
10	Stratified fine-medium sands with silt & gravel		AV 110	11-13'	Soil	
		Well #7, 2" PVC	AV 111	13-15'	Soil	
15						
			AV 112	18-20'	Soil	
20			AV 113	20-22'	Soil	
	22.0'	22.0'				
	Bottom of boring @ 22.0'	Bentonite seals installed: #7 9-10' #7A 0.5-1.5'				

NOTES:

GHR

ACCT. No. 2463

BORING / OBSERVATION WELL SUMMARY LOG

BORING No. 8

PROJECT Aerovox SHEET 1 OF 1

LOCATION New Bedford, MA CONTRACTOR D.L. Maher

CLIENT Aerovox DATE INSTALLED July 29, 1982

GHR FIELD ENGR. G. Hartley, G. Keegan

DEPTH	STRATA DESCRIPTIONS	INSTALLATION LOG	FIELD SAMPLING I.D. No.	DEPTH	SAMPLE DESCRIPTIONS	NOTES
	Brown to black medium-coarse sand with some silt; oil soaked at 0.4' and 4-4.7'	Well #8, 2" PVC	AV 115	0-2'	Soil	
			AV 116	2-4'	Soil	
5			AV 117	4-6'	Soil	
	6.0'					
	Peat with roots & some medium sand		AV 118	6-9'	Soil	
	9.2'	Bentonite seal				
			AV 119	9-12'	Soil	
10	Medium-coarse sand & gravel over silty sand					
	12.0'	12.0'				
	Bottom of boring @ 12.0'					
15						

NOTES:

GHR

ACCT. No. 2463

BORING / OBSERVATION WELL SUMMARY LOG

BORING No. TB- 1

PROJECT PCB Soil Survey — SHEET one OF one

LOCATION New Bedford, MA — CONTRACTOR D.L. Maher

CLIENT Aerovox, Inc — DATE INSTALLED 11/10/82

GHR FIELD ENGR. R.J. Bouchard — Ground Elevation = 4.97

DEPTH	STRATA DESCRIPTIONS	INSTALLATION LOG	FIELD SAMPLING I.D. No.	FIELD SAMPLING DEPTH	FIELD SAMPLING SAMPLE DESCRIPTIONS	NOTES
			1	0-2	black-brown granular back-	
2	fill				fill with pebbles	
	sand	4-6-8	2	2-3.5	light gray sand & gravel	
		8	3	3.5-4	wet	
		1-2-2-5	4	4.5-6.5	light gray sand, wet 8"	
5						
	peat				dark,gray clay with peat 12	
6.5					laminations (2") moist	
	fine-medium sand				black, organic-rich fine-	
9					medium sand and silt	
	medium-coarse sand	2-1-1-1	5	6.5-9	black fine-medium sand with	
10					organic inch layers	
10.5	peaty clay				3" peat layer at 9'	
11						
	coarse sand		6	8.5-11	gray medium-coarse sand	
		1-1-1-1-4			graded sequence with organics	
14.5						
15	fine-medium sand		7	10-12	coarse sand with roots	
16		2-5-5-4	8	14.5-16	gray fine-meidum sand with	
	bottom of boring	17-21-32			pebbles	
20						

NOTES:

GHR

ACCT. No. 2463

BORING / OBSERVATION WELL SUMMARY LOG

BORING No. TB-2

PROJECT PCB Soil Survey SHEET one OF one

LOCATION New Bedford, MA CONTRACTOR D.L. Maher

CLIENT Aerovox, Inc DATE INSTALLED 11/10/82

GHR FIELD ENGR. R.J. Bouchard Ground Elevation = 4.47

DEPTH	STRATA DESCRIPTIONS	INSTALLATION LOG	FIELD SAMPLING I.D. No.	DEPTH	SAMPLE DESCRIPTIONS	NOTES
	fill		1	0-2	granular fill with wood	1
2					boulders, bricks	
	peaty clay		2	2-4	2" brown sandy fill	
					1" black organic layer	
5					12" dary gray clay, dense	
					with peat layers and silty	
					laminations	
7.5			3	5--7.5	same as above	
9	fine sand		4	7.5-10	gray silty find sand with	
10	peaty clay				organic laminations 1"	
	coarse sand and gravel				6" peaty clay coarsens to	
12					pebbly sand - 4"	
		bottom of boring	5	10-12	gray coarse sand and gravel	

NOTES:

1 No sample retained

GHR

ACCT. No. 2463

BORING / OBSERVATION WELL SUMMARY LOG

BORING No. TB-3

PROJECT PCB Soil Survey

SHEET one OF one

LOCATION New Bedford, MA

CONTRACTOR D.L. Maher

CLIENT Aerovox, Inc

DATE INSTALLED 11/10/82

GHR FIELD ENGR. R.J. Bouchard

Ground Elevation = 3.20

DEPTH	STRATA DESCRIPTIONS	INSTALLATION LOG	FIELD SAMPLING I.D. No.	DEPTH	SAMPLE DESCRIPTIONS	NOTES
0	Fill		1	0-1.5	black granular backfill	1
2			2	1.5-3.5	8" fill, organic layer	
3.5	peaty clay				4" gray clay with peat	
4.5	peaty sand		3	3.5-5.5	4" blueish gray sand	
	peaty clay				4" brown peat, dense	
5.5					4" black fine silty sand	
	fine-medium sand with peat				12" clay with peat	
			4	5.5-8	medium sand with organic	
8					laminations at 6'	
	fine sand and silt				4" gray-black clay	
					12" fine-medium sand	
10					with organics	
			5	8-10	gray fine sand grades to	
					silt	
			6	10-12	silt	
			7	12-14	fine sand and silt	
15			8	14-15.5	fine sand and silt	
17.5			9	15.5-17.5	fine sand and silt	
		bottom of boring				

NOTES: 1 No recovery

GHR

ACCT. No. 2463

BORING / OBSERVATION WELL SUMMARY LOG

BORING No. TB-4

PROJECT PCB Soil Survey SHEET one OF one

LOCATION New Bedford, MA CONTRACTOR D.L. Maher

CLIENT Aerovox, Inc DATE INSTALLED 11/10/82

GHR FIELD ENGR. R.J. Bouchard Ground Elevation = 4.80

DEPTH	STRATA DESCRIPTIONS	INSTALLATION LOG	FIELD SAMPLING I.D. No.	DEPTH	SAMPLE DESCRIPTIONS	NOTES
	fill		1	0-2	fill - gravel and refuse	1
2			2	2-4	dark orange-brown mud, oily	2
	refuse			3-5	with black rubber artifacts	3
5			3	5-7.5	18" black oily clay	
	clay				dark gray sandy clay grades	4
7.5					to fine sand	
	fine sand grades to medium-coarse sand		4	7-9.5	6" clay black	
					12" coarse sand with	
10					peat, roots	
13			5	9-11	18" brown medium sand	
		bottom of boring			6" gray sand	
			6	11-13	sand and gravel	

NOTES:
1 No sample retained
2 No recovery
3 2nd run at 3-5'
4 Minor peat laminations (¼")

GHR

ACCT. No. 2463

BORING / OBSERVATION WELL SUMMARY LOG

BORING No. TB-5

PROJECT PCB Soil Survey SHEET one OF one

LOCATION New Bedford, MA CONTRACTOR D.L. Maher

CLIENT Aerovox, Inc DATE INSTALLED 11/11/82

GHR FIELD ENGR. R.J. Bouchard

DEPTH	STRATA DESCRIPTIONS	INSTALLATION LOG	FIELD SAMPLING			NOTES
			I.D. No.	DEPTH	SAMPLE DESCRIPTIONS	
	blacktop			0-1.9	Blacktop and gravel	
2			1	2-3	Medium-coarse sandfill	1
	fill					

NOTES:

1 Boring abandoned at 3'

GHR

ACCT. No. 2463

BORING / OBSERVATION WELL SUMMARY LOG

BORING No. TB-6

PROJECT PCB Soil Survey SHEET one OF one

LOCATION New Bedford, MA CONTRACTOR D.L. Maher

CLIENT Aerovox, Inc DATE INSTALLED 11/11/82

GHR FIELD ENGR. R.J. Bouchard Ground Elevation = 5.80

DEPTH	STRATA DESCRIPTIONS	INSTALLATION LOG	FIELD SAMPLING I.D. No.	DEPTH	SAMPLE DESCRIPTIONS	NOTES
	fill			0-2.5	Sand and gravel fill	1
		3-2-2-3	1	2.5-4.5	Sand	
5		2-1-2-8	2	4.5-6.5	Medium-coarse sand	
	sand	6-8-14-19	3	6.5-8.5	Light brown to yellow medium-coarse sand	
10		10-16-18-24	4	8.0-10	Fine-medium sand 10" coarse sand, gravel 4"	
		4-7-14-22	5	10-12	medium-coarse sand	
		3-8-16-21	6	12-14	Fine-medium sand	
15		3-9-18-23	7	14-16	Fine-medium sand	
16						
		bottom of boring				

NOTES:

1 Dug by hand

GHR

ACCT. No. 2463

BORING / OBSERVATION WELL SUMMARY LOG

BORING No. TB- 7

PROJECT PCB Soil Survey SHEET one OF one

LOCATION New Bedford, MA CONTRACTOR D.L. Maher

CLIENT Aerovox, Inc DATE INSTALLED 11/11/82

GHR FIELD ENGR. R.J. Bouchard Ground Elevation = 5.30

DEPTH	STRATA DESCRIPTIONS	INSTALLATION LOG	FIELD SAMPLING I.D. No.	DEPTH	SAMPLE DESCRIPTIONS	NOTES
1	pavement			0-1.5	pavement, gravel	1
	fill		1	5-2	gray-black granular fill coarse sand	1
3			2	2-3	5" oily sand	
	peat		3	2.5-4.5	12" black coarse sand	
4	sand				1" organic layers and	
5	peat				decomposed peat	
			4	4.0-6.5	black coarse sand, wet	
9.5			5	5-9.5	24" organic rich peat	
	sand				with sandy layers	
			6	8-10.5	peat with coarse sand at	
					9.5	
12			7	10-12	coarse sand	
		bottom of boring				

NOTES:

1 No sample retained

GHR

ACCT. No. 2463

BORING / OBSERVATION WELL SUMMARY LOG

BORING No. TB- 8

PROJECT PCB Soil Survey SHEET one OF one

LOCATION New Bedford, MA CONTRACTOR D.L. Maher

CLIENT Aerovox, Inc DATE INSTALLED 11/11 /82

GHR FIELD ENGR. R.J. Bouchard Ground Elevation = 7.01

DEPTH	STRATA DESCRIPTIONS	INSTALLATION LOG	FIELD SAMPLING I.D. No.	DEPTH	SAMPLE DESCRIPTIONS	NOTES
	fill		1	0-2	black-brown granular	
					backfill with peat and clay	
					at 2'	
4			2	2-4	fill with clean fine sand	
	sand				and cinders at 4'	
6			3	4-6.5	fine sand with black	
	peaty clay				organic rich peat layers	
			4	6-8.5	4" organic silt	
					4" gray caly with roots	
8					6" dense peat	
	sandy peat				8" gray clay	
9	sand & gravel		5	8-9	12" sandy peat with black	
	fine sand				layers, pebbles	
					2" rock fragments	
			6	9-11	6" coarse sand and gravel	
11					fill sand at 10'	
		bottom of boring				

NOTES:

GHR

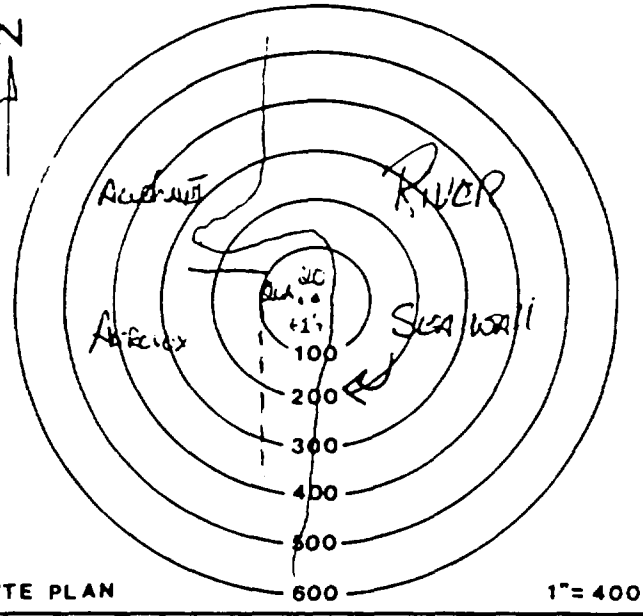
ACCT. No. 2463

D.L.MAHER CO.
GROUND WATER DEVELOPMENT
P.O. BOX 127 71 CONCORD STREET
NORTH READING • MA. 01864 • 617/933-3210

Test Well No. TB20-83 D.L.M. Job No. TB4-90-83
Driller Costy Helper Davis
Client G. H. R
Location Acton
Owner's Representative Bob Cummings
Date Started: 4-26-83 Date Finished: 4-26-83

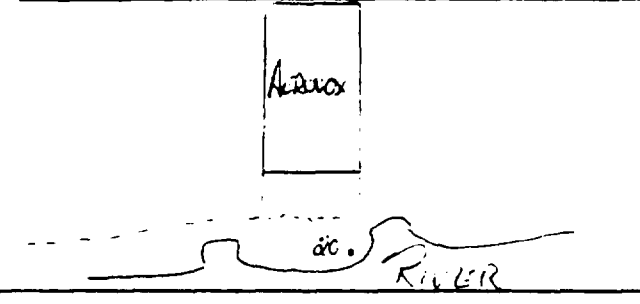
DEPTH From	DEPTH To	Soil Classification
0	1	Flat Rocks 12"
1	10	Sand Silty Gray w/Clay & Peat Fibers

Loss of Wash Water



SITE PLAN 1"= 400'

LOCUS Boxboro Rd



TIME AND MATERIALS

Test Well No.	Diam.	Total Depth	Comp. Depth	Casing Left	Screen Length	Screen Exposed	Screen Material	Screen Slot Size	Screen Riser	Hours Dev.	Hours Pumped
20	E,450	10'	10'	0						0	0

REMARKS: No Materials left in Ground

Pump Test on Hole No. None Date

Time	G.P.M.	Water Levels Vac	Obs. No.	Obs. No.	Obs. No.
Static					

Water Sample None
Date _____ Time _____
Sent To:

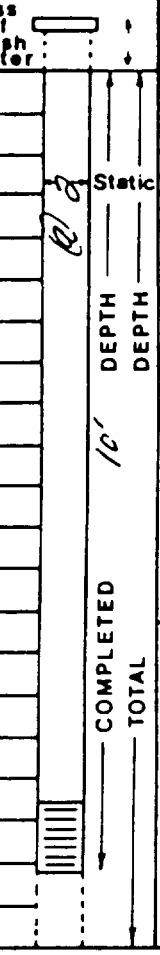
Field Quality
CO_2 _____ Taste _____
Fe _____ Odor _____
Mn _____ Hardness _____
Ph _____ Color _____

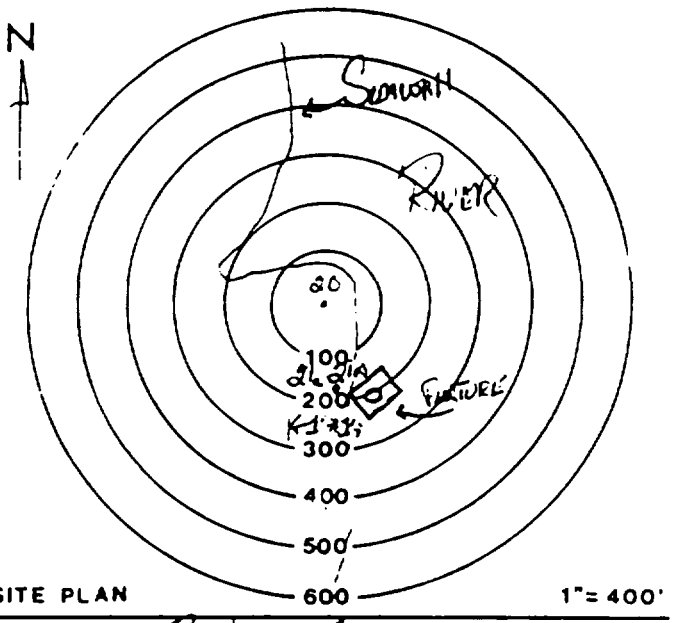
D.L.MAHER CO.
GROUND WATER DEVELOPMENT
P.O. BOX 127 71 CONCORD STREET
NORTH READING • MA. 01864 • 617/933-3210

Test Well No. TB21-83 D.L.M. Job No. TB4-01-83
Driller County Helper Dave
Client G. H. P.
Location Acton
Owner's Representative Bob Cummings
Date Started: 4-26-83 Date Finished: 4-26-83

DEPTH From	DEPTH To	Soil Classification
		TB-21
0'	10'	Silty Sand Gray w/Clay
		Trace of Rock
		TB-21A
0'	8'	Silty Sand Gray w/Clay
		Trace of Rock
8'	8.5'	Rock
8.5	10'	Silty Sand w/Clay

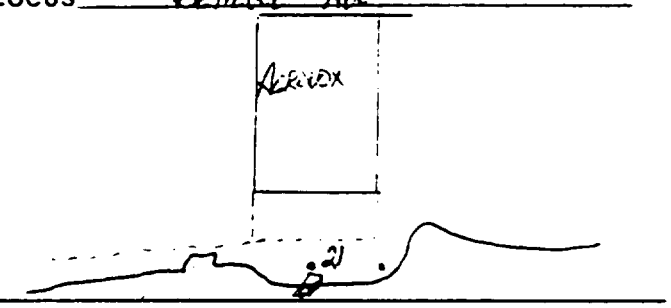
Loss of Wash Water





SITE PLAN 1"= 400'

LOCUS Bellows Farm



TIME AND MATERIALS

Test Well No.	Diam.	Total Depth	Comp. Depth	Casing Left	Screen Length	Screen Exposed	Screen Material	Screen Slot Size	Screen Riser	Hours Dev.	Hours Pumped
TB21	6" HSA	10'	10'	0						0	

REMARKS:

Pump Test on Hole No. 0 Date

Time	G.P.M.	Water Levels Vac	Obs. No.	Obs. No.	Obs. No.
Static					

Water Sample 0
Date _____ Time _____
Sent To:

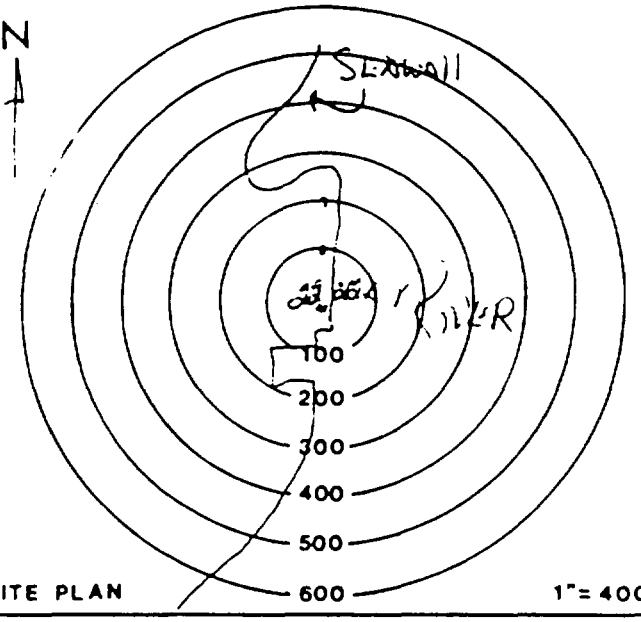
Field Quality
CO_2 _____ Taste _____
Fe _____ Odor _____
Mn _____ Hardness _____
Ph _____ Color _____

D.L.MAHER CO.
GROUND WATER DEVELOPMENT
P.O. BOX 127 71 CONCORD STREET
NORTH READING • MA. 01864 • 617/933-3210

Test Well No: TB-22-83 D.L.M. Job No: TB4-90-83
Driller Crotty Helper Davis
Client G.H.R.
Location Approx
Owner's Representative Bob Cummings
Date Started: 4-26-83 Date Finished: 4-

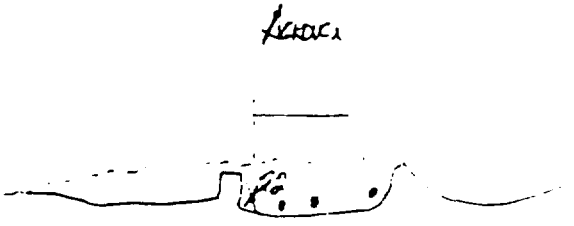
DEPTH From	DEPTH To	Soil Classification	Loss of Wash Water
		TB 22	
0	1	Flat Rock	
1	8.5	Peat, Silty Clay & Peat	
		TB-22A	
0	7	Peat, Silty Clay & Peat	

Static
DEPTH
DEPTH
COMPLETED
TOTAL



SITE PLAN 1"= 400'

LOCUS



TIME AND MATERIALS

Test Well No.	Diam.	Total Depth	Comp. Depth	Casing Left	Screen Length	Screen Exposed	Screen Material	Screen Slot Size	Screen Riser	Hours Dev.	Hours Pumped
TB-22	8"HSA	8.5	8.5	Ø						Ø	

REMARKS:

Pump Test on Hole No. Ø Date

Time	G.P.M.	Water Levels Vac	Obs. No.	Obs. No.	Obs. No.
Static					

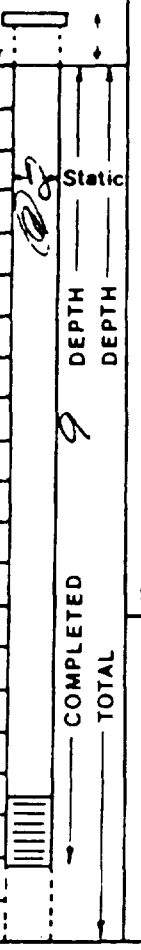
Water Sample Ø
Date _____ Time _____
Sent To:

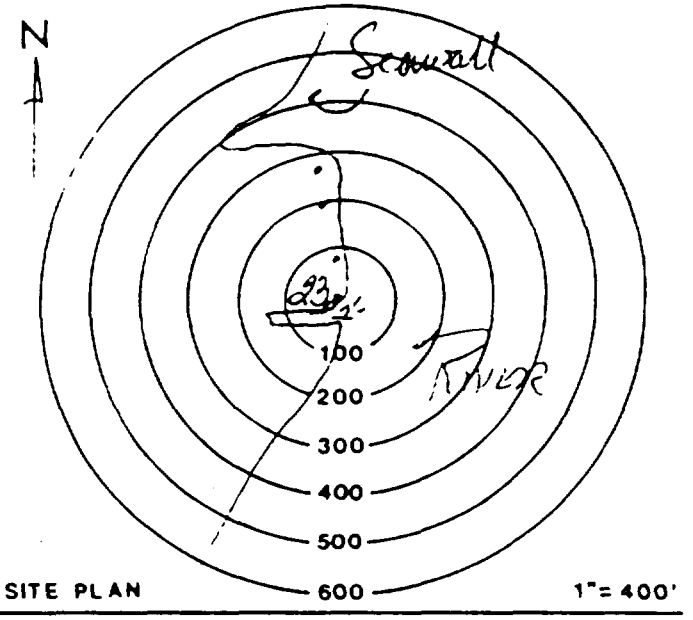
Field Quality
CO_2 _____ Taste _____
Fe _____ Odor _____
Mn _____ Hardness _____
Ph _____ Color

D.L.MAHER CO.
GROUND WATER DEVELOPMENT
P.O. BOX 127 71 CONCORD STREET
NORTH READING • MA. 01864 • 617/933-3210

Test Well No. TB-23-83 D.L.M. Job No. TB-90-83
Driller Cathy Helper Dave
Client G+R
Location Aerovox
Owner's Representative Bob Cummings
Date Started: 4-26-83 Date Finished: 4-26-83

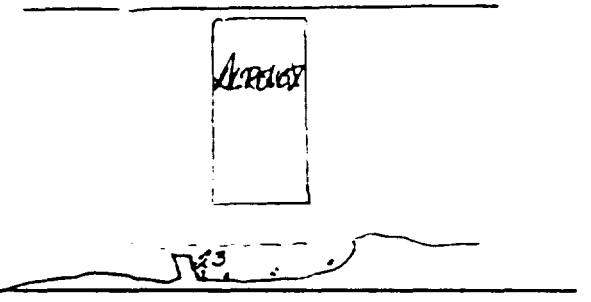
DEPTH From	DEPTH To	Soil Classification	Loss of Wash Water
		TB-23 & TB-23A	
0	3	Flat Rocks	
3	7	Silty Peat w/Clay	
7	9	Peat	





SITE PLAN 1"= 400'

LOCUS



TIME AND MATERIALS

Test Well No.	Diam.	Total Depth	Comp. Depth	Casing Left	Screen Length	Screen Exposed	Screen Material	Screen Slot Size	Screen Riser	Hours Dev.	Hours Pumped
TB-23	6" HSA	9	9	0						0	

REMARKS:

Pump Test on Hole No. 0 Date

Time	G.P.M.	Water Levels Vac	Obs. No.	Obs. No.	Obs. No.
Static					

Water Sample 0
Date Time
Sent To:

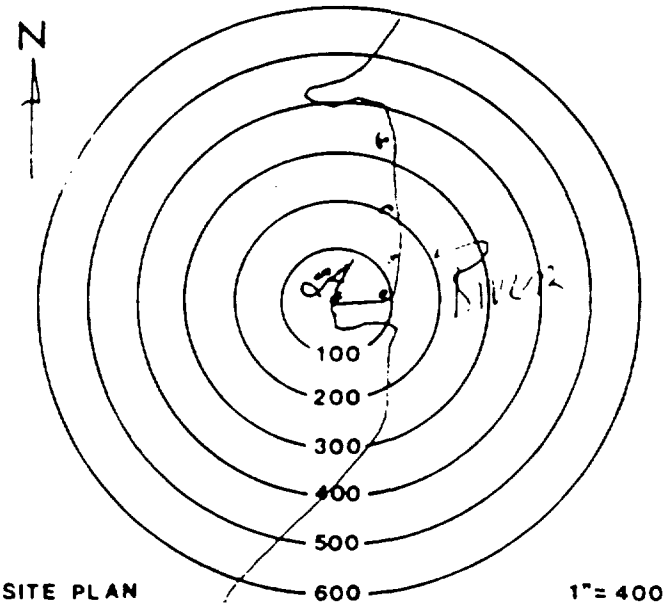
Field Quality
CO_2 Taste
Fe Odor
Mn Hardness
Ph Color

D.L.MAHER CO.
GROUND WATER DEVELOPMENT
P.O. BOX 127 71 CONCORD STREET
NORTH READING • MA. 01864 • 617/933-3210

Test Well No. TB-24-83 D.L.M. Job No. TB4-90-83
Driller CASEY Helper DAVIS
Client GHR
Location ANDOVER
Owner's Representative Bob Commings
Date Started: 9-26-83 Date Finished: 9-26-83

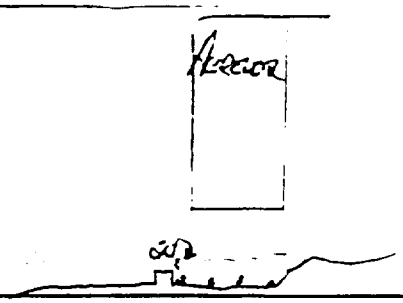
DEPTH From	DEPTH To	Soil Classification	Loss of Wash Water
		TB-24	
0	4	ROCKS 12"-18"	
4	7	BOULDERS	
7	9	Peat w/ Silty Clay	

Static
DEPTH
DEPTH
COMPLETED
TOTAL



SITE PLAN 1"= 400'

LOCUS



TIME AND MATERIALS

Test Well No.	Diam.	Total Depth	Comp. Depth	Casing Left	Screen Length	Screen Exposed	Screen Material	Screen Slot Size	Screen Riser	Hours Dev.	Hours Pumped
TB-24 Bedrock		9	9	0						6	

REMARKS:

Pump Test on Hole No. 0 Date

Time	G.P.M.	Water Levels Vac	Obs. No.	Obs. No.	Obs. No.
Static					

Water Sample 0
Date Time
Sent To:

Field Quality
CO_2 Taste
Fe Odor
Mn Hardness
Ph Color

D.L.MAHER CO.
GROUND WATER DEVELOPMENT
P.O. BOX 127 71 CONCORD STREET
NORTH READING • MA. 01864 • 617/933-3210

Test Well No. TB-25-83 D.L.M. Job No. TB-G-83
Driller Canty Helper Davis
Client GHES
Location N. Boston
Owner's Representative Bob Cummings
Date Started: 9-26-83 Date Finished: 9-26-83

DEPTH From	DEPTH To	Soil Classification
		TB-25 & TB-25A
0	2	Rocks
2	5	Silty Peat
5	9	Peat

Loss of Wash Water

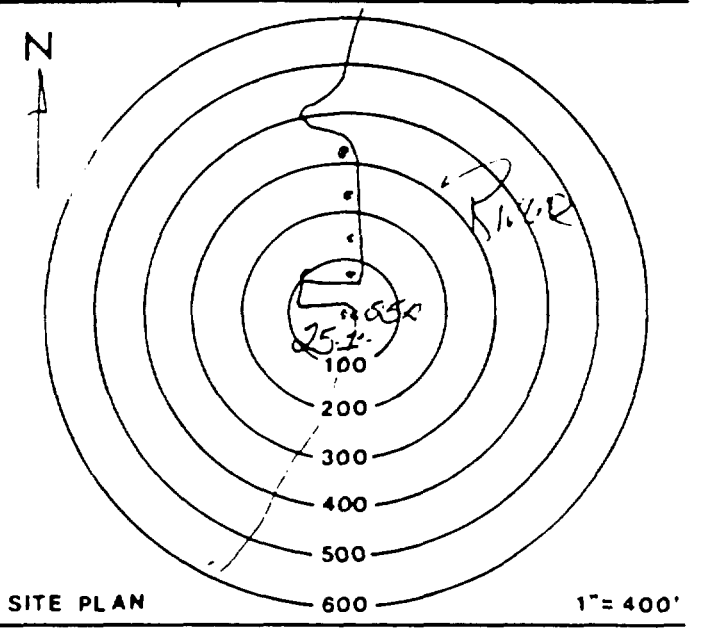
Static

DEPTH

DEPTH

COMPLETED

TOTAL



SITE PLAN 1"= 400'

LOCUS

Access

TIME AND MATERIALS

Test Well No.	Diam.	Total Depth	Comp. Depth	Casing Left	Screen Length	Screen Exposed	Screen Material	Screen Slot Size	Screen Riser	Hours Dev.	Hours Pumped
TB-25	8"	9	9	0						0	

REMARKS:

Pump Test on Hole No. 0 Date

Time	G.P.M.	Water Levels Vac	Obs. No.	Obs. No.	Obs. No.
Static					

Water Sample 0

Date Time

Sent To:

Field Quality

CO_2 Taste

Fe Odor

Mn Hardness

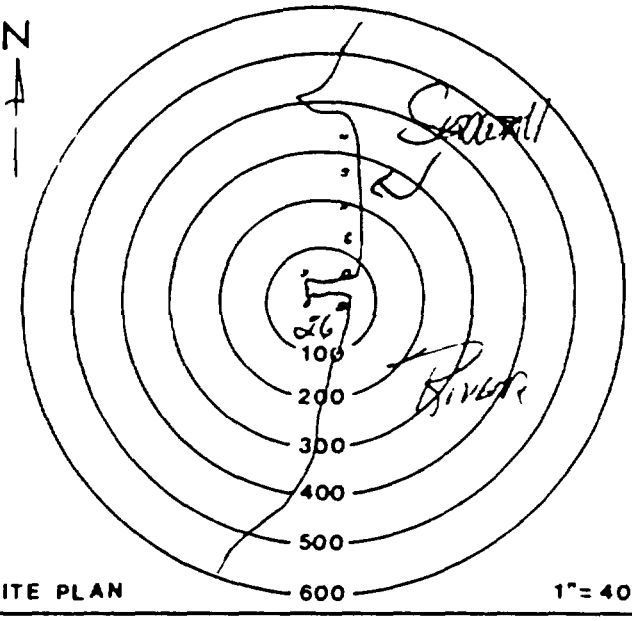
Ph Color

D.L.MAHER CO.
GROUND WATER DEVELOPMENT
P.O. BOX 127 71 CONCORD STREET
NORTH READING • MA. 01864 • 617/933-3210

Test Well No. TB-26-83 D.L.M. Job No. TBH-50-83
Driller Cassidy Helper Davis
Client BHR
Location Andover
Owner's Representative Bob Cummings
Date Started: 9-26-83 Date Finished: 9-26-83

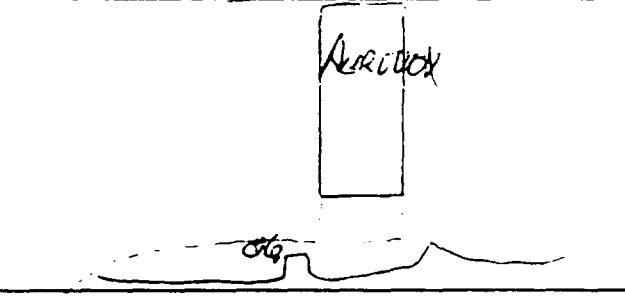
DEPTH From	DEPTH To	Soil Classification
		TB-26
0	4	Rocks
4	6	Product
6	8.5	Fill of Gravel

Loss of Wash Water



SITE PLAN 1"= 400'

LOCUS



TIME AND MATERIALS

Test Well No.	Diam.	Total Depth	Comp. Depth	Casing Left	Screen Length	Screen Exposed	Screen Material	Screen Slot Size	Screen Riser	Hours Dev.	Hours Pumped
TB-26	6"&4"SD	8.5	8.5	Ø						Ø	

REMARKS:

Pump Test on Hole No. Ø Date

Time	G.P.M.	Water Levels Vac	Obs. No.	Obs. No.	Obs. No.
Static					

Water Sample Ø

Date _____ Time _____

Sent To:

Field Quality

CO_2 _____ Taste _____

Fe _____ Odor _____

Mn _____ Hardness _____

Ph Color

D.L. MAHER CO.

GROUND WATER DEVELOPMENT

P.O. BOX 127 71 CONCORD STREET

NORTH READING • MA. 01864 • 617/933-3210

Test Well No. TB-27-83 D.L.M. Job No. TB4-90-83

Driller Canty Helper Davis

Client GHR

Location Acton

Owner's Representative Bob Cummings

Date Started: 4-26-83 Date Finished: 4-26-83

DEPTH From	DEPTH To	Soil Classification
0	4	Large Rocks

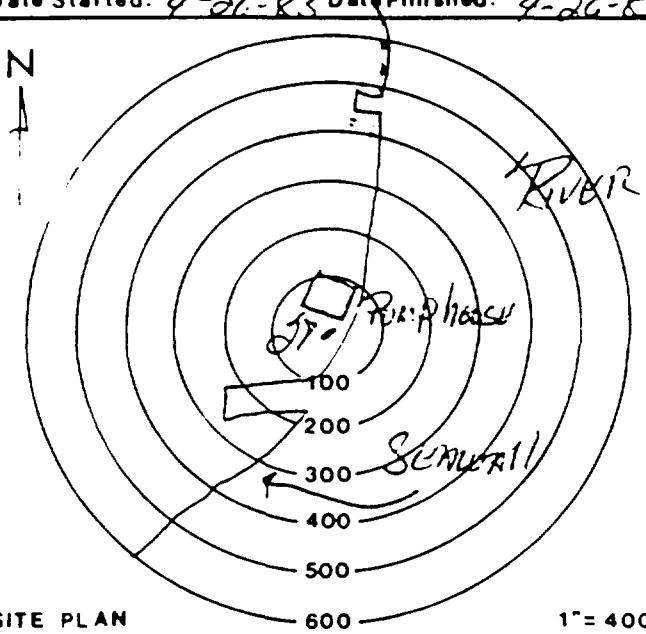
Loss of Wash Water

Static

DEPTH COMPLETED

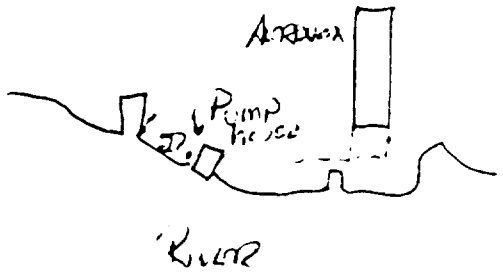
DEPTH TOTAL

4'



SITE PLAN 1"= 400'

LOCUS



TIME AND MATERIALS

Test Well No.	Diam.	Total Depth	Comp. Depth	Casing Left	Screen Length	Screen Exposed	Screen Material	Screen Slot Size	Screen Riser	Hours Dev.	Hours Pumped
TB27	8 4SR	4'	4'	0						0	

REMARKS:

Pump Test on Hole No. 0 Date

Time	G.P.M.	Water Levels Vac	Obs. No.	Obs. No.	Obs. No.
Static					

Water Sample 0

Date Time

Sent To:

Field Quality

CO_2 Taste

Fe Odor

Mn Hardness

Ph Color

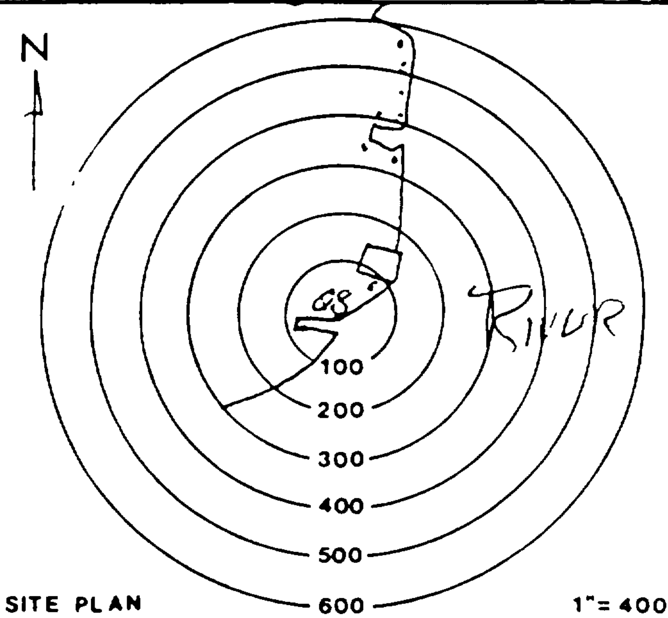
D.L. MAHER CO.
GROUND WATER DEVELOPMENT
P.O. BOX 127 71 CONCORD STREET
NORTH READING • MA. 01864 • 617/933-3210

Test Well No: TB-28-83 D.L.M. Job No: TB-80-83
Driller: Canty Helper: Davis
Client: GHR
Location: Aroostook
Owner's Representative: Bob Cummings
Date Started: 8-26-83 Date Finished: 8-26-83

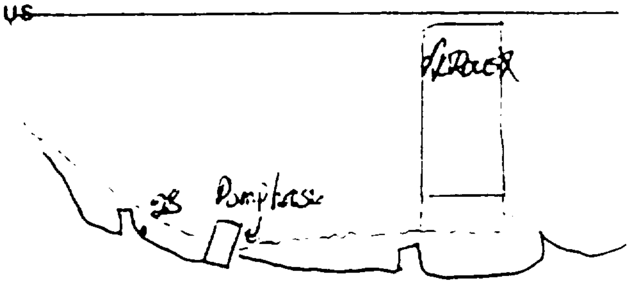
DEPTH From	DEPTH To	Soil Classification	Loss of Wash Water
0	.5	Rock	
.5	3	Loose Silty Sand	
3	8	Gray Clay w/ Peat	
8	13	Brn. Sand & Gravel	

Static: Ø
Completed Depth: 13
Total Depth

SITE PLAN 1" = 400'



LOCUS



TIME AND MATERIALS

Test Well No.	Diam.	Total Depth	Comp. Depth	Casing Left	Screen Length	Screen Exposed	Screen Material	Screen Slot Size	Riser	Hours Dev.	Hours Pumped
TB-28-83	8" HSA	13	13	Ø						Ø	

REMARKS: 20 lbs Bentonite installed in Borehole at 8'

Pump Test on Hole No. Ø Date

Time	G.P.M.	Water Levels Vac	Obs. No.	Obs. No.	Obs. No.
Static					

Water Sample Ø
Date ______ Time ______
Sent To:

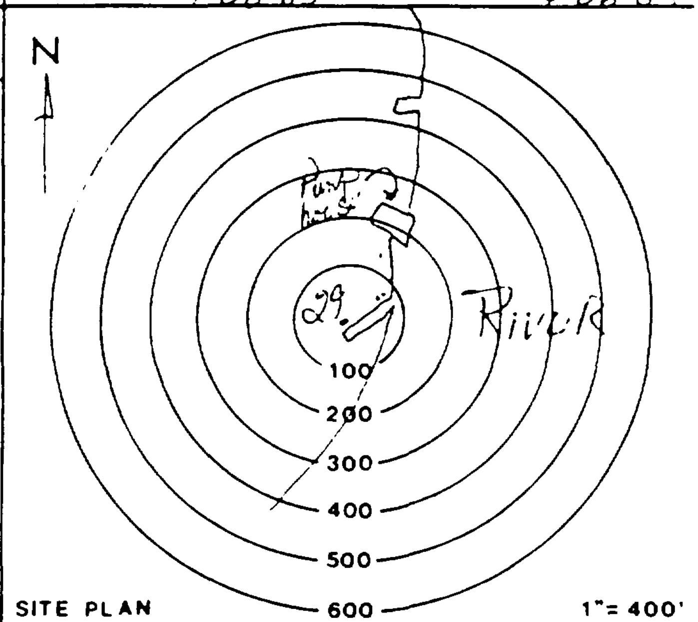
Field Quality
CO_2 ______ Taste ______
Fe ______ Odor ______
Mn ______ Hardness ______
Ph ______ Color ______

D.L. MAHER CO.
GROUND WATER DEVELOPMENT
P.O. BOX 127 71 CONCORD STREET
NORTH READING • MA. 01864 • 617/933-3210

Test Well No TB-29-83	D.L.M. Job No [illegible]-90-83
Driller Canty	Helper Davis
Client GHR	
Location Norwalk	
Owner's Representative Bob Cummings	
Date Started: 4-26-83	Date Finished: 4-26-83

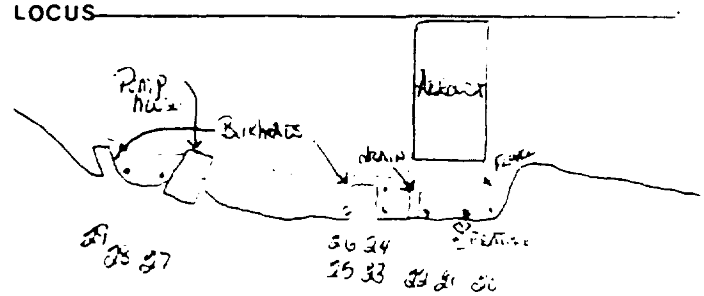
DEPTH From	DEPTH To	Soil Classification	Loss of Wash Water
		TB-29-83	
0	3	Brn Sand & Gravel w/Peat	
3	9	Peat	

Static — COMPLETED DEPTH — TOTAL DEPTH



SITE PLAN 1" = 400'

LOCUS



TIME AND MATERIALS

Test Well No.	Diam	Total Depth	Comp. Depth	Casing Left	Screen Length	Screen Exposed	Screen Material	Screen Slot Size	Riser	Hours Dev.	Hours Pumped
TB-29-83	8" HSA	9	9	Ø						Ø	

REMARKS:

Pump Test on Hole No. Ø Date

Time	G.P.M.	Water Levels Vac	Obs. No.	Obs. No.	Obs. No.
Static					

Water Sample Ø

Date ______ Time ______

Sent To:

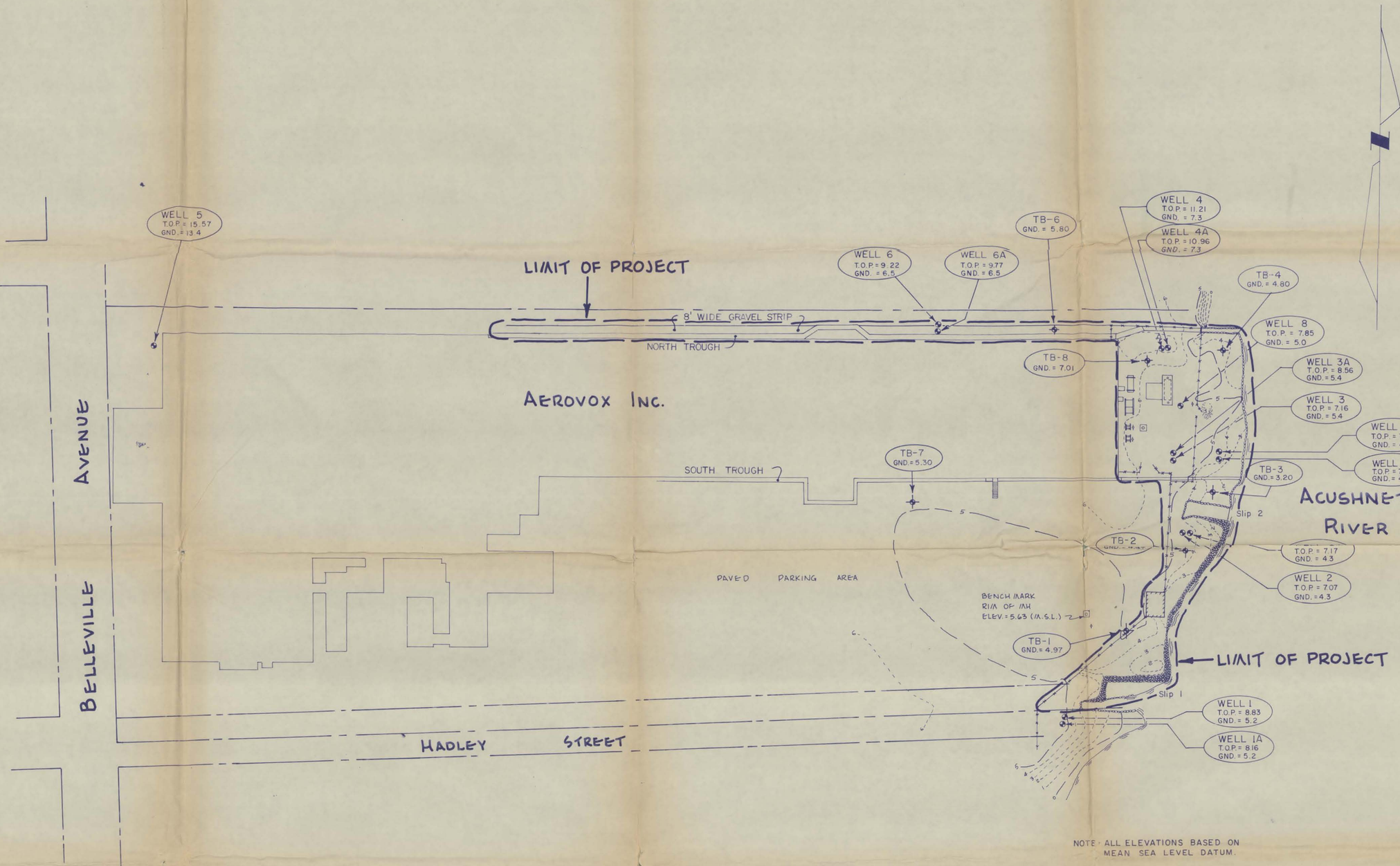
Field Quality

CO_2 ______ Taste ______

Fe ______ Odor ______

Mn ______ Hardness ______

Ph ______ Color ______



NOTE: ALL ELEVATIONS BASED ON MEAN SEA LEVEL DATUM.

LEGEND

- HYDRANT
- POWER POLE
- CHAIN LINK FENCE
- 5 EXISTING CONTOUR
- ROCKS (SEA WALL)
- M.S.L. MEAN SEA LEVEL
- GND. GROUND ELEVATION
- T.O.P. ELEV. OF TOP OF EXTERIOR PIPE
- GROUNDWATER OBSERVATION WELL
- TEST BORING (NOVEMBER 10&11, 1982)

REVISED—AUG. 23, 1983
REVISED—JAN. 6, 1983

AEROVOX PLANT, NEW BEDFORD, MASS.

GHR ENGINEERING CORPORATION
75 TARKILN HILL ROAD · NEW BEDFORD, MA. 02745

DATE: 9-17-82
SCALE: 1"=50'
DRAWN: D.F.
CHECKED: J.J.G.
JOB NO: 2463

CLIENT: AEROVOX INCORPORATED

DWG. TITLE: SITE PLAN SHOWING LIMIT OF PROJECT

DWG. NO. SP-1

WELL 1A
WELL 1
INV. 8" C.I. PIPE = 0.69
EXIST. BOX CULVERT
INV. 4' x 2.25' BOX CULVERT = -1.39
BENCHMARK
RIM OF M.H.
ELEV. = 5.63 (M.S.L.)
GRAVEL AREA
GUARD POST
TB 29
E/P
GRAVEL AREA
GUARD POST (TYP.)
BRICK BLDG. (ABANDONED)
8' HIGH CHAIN LINK FENCE & EDGE OF PAVEMENT
POLE # S-12
EXIST. 10" CLAY PIPE
TB 28
TB 27
WELL 2A
WELL 2
TB 26
TB 24
INV. 8" CLAY PIPE = 1.24
TOP OF HEADWALL 2.8
TB 25A
TB 25
TB 23A
TB 23
TB 22A
TB 22
TB 21A
TB 21
TB 20
INV. 24" CLAY PIPE = 0.35 (NO LONGER IN SERVICE **)
ACUSHNET RIVER
WELL 6
WELL 6A
AEROVOX BUILDING
RAISED CONC. PAD W/ MH
CONCRETE TRANSFORMER SUPPORTS 7.5' TALL
CONC. SUPPORTS FOR COOLING EQUIPMENT
VENT
CONC. PAD
RAISED CONC PAD W/ MH
COOLING CONTROL CHAMBER
COOLING UNIT
WATER GATE
WELL 3
WELL 3A
WELL 8
WELL 4
WELL 4A
TOP OF CONC. COVER = 5.25
GATE
8' HIGH CH. LINK FENCE (TYP.)
WELL 7
WELL 7A
OPEN TROUGH
COVERED TROUGH
WALK
GRASS STRIP
GRANITE CURB
CONCRETE
GATE
CONC. PAD
6.82 TOP OF CONC. COVER
5' CONC. WALL W/ CH. LINK FENCE
EDGE OF PAVEMENT
INV. 12" ASBESTOS PIPE = 3.70
INV. 6" CONC. PIPE = 2.57
ACUSHNET COMPANY

NOTES:

1) UNDERGROUND UTILITIES SHOWN SCHEMATICALLY FOR GENERAL INFORMATIONAL PURPOSES ONLY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ESTABLISHING THE EXACT LOCATIONS OF THESE UTILITIES.

2) ** AS PER AEROVOX INC. EMPLOYEES

LEGEND

- ROCKS & BOULDERS
- 8' HIGH CHAIN LINK FENCE
- POWER POLE
- MANHOLE
- CB CATCH BASIN
- EXISTING CONTOUR
- EXISTING GROUND ELEVATION (M.S.L.)
- WELL 8 WELL NUMBER AND LOCATION
- TB 20 TEST BORING (APRIL 26, 1983)
- W WATER LINE
- S SEWER LINE

0 50 100
SCALE IN FEET

REVISED 8-23-83

EAST END OF AEROVOX PLANT, NEW BEDFORD, MA.

GHR ENGINEERING CORPORATION
75 TARKILN HILL ROAD · NEW BEDFORD, MA. 02745

DATE: MAY 9, 1983
SCALE: 1" = 20'
DRAWN: D.F.
CHECKED: R.S.C.
JOB NO: 2463

CLIENT: AEROVOX INCORPORATED

DWG. TITLE: EXISTING CONDITIONS

DWG. NO.: EC-1

WELL 6
WELL 6A
WELL 1A
WELL 1
BENCHMARK
RIM OF M.H.
ELEV. = 5.63 (M.S.L.)
INV. 8" C.I. PIPE = 0.69
INV. 4' x 2.25' BOX CULVERT = 1.39
EXIST. BOX CULVERT
GRAVEL AREA
GUARD POST
E/P
SOUTH TROUGH
NORTH TROUGH
OPEN TROUGH
AERovox BUILDING
RAISED CONC. PAD W/ M.H.
CONCRETE TRANSFORMER SUPPORTS 7.5' TALL
CONC. SUPPORTS FOR COOLING EQUIPMENT
VENT
GATE
CONC. PAD
WALK
GRASS STRIP
GRANITE CURB
CONCRETE
LIMIT OF PROJECT
ACUSHNET COMPANY
GRAVEL AREA
10" CLAY PIPE
GUARD POST (TYP.)
PROP. M.H. INV. = 0.5
PLUG
8' HIGH CHAIN LINK FENCE & EDGE OF PAVEMENT
POLE # S-12
BRICK BLDG. (ABANDONED)
LIMIT OF PROJECT
INSTALL DRAINAGE SCUPPER
PROPOSED STONE & STONE CHIP FILL (TYP.) (SEE DETAIL PLAN)
EXIST. 8" CLAY TO BE EXTENDED THROUGH SHEET PILING.
INV. 8" CLAY PIPE = 1.24
TOP OF HEADWALL = 2.8
PROP. 12" ALSP INV. = 0.0
WELL 2
WELL 2A
WELL 3
WELL 3A
WELL 8
WELL 4
WELL 4A
WELL 7
WELL 7A
RAISED CONC. PAD W/ M.H.
COOLING CONTROL CHAMBER
COOLING UNIT
WATER GATE
8' HIGH CHAIN LINK FENCE (TYP.)
6.82 TOP OF CONC. COVER
7.01
5' CONC. WALL W/ CH. LINK FENCE
EDGE OF PAVEMENT
INV. 12" ASBESTOS PIPE = 3.70
INV. 6" CONC. PIPE = 2.57
INSTALL DRAINAGE SCUPPER 6" HIGH x 12" WIDE (TYP.)
INV. AT END OF PROP. TROUGH EXTENSION = 3.0
INV. 24" CLAY PIPE = 0.35
INSTALL DRAINAGE SCUPPER
ACUSHNET RIVER

STEEL SHEET PILING LEGEND

DENOTES SHEET PILING TO BE CONSTRUCTED 18" ABOVE FINISH GRADE (SEE DETAIL PLAN)

DENOTES SHEET PILING TO BE CUT OFF AT SUBGRADE ELEVATION (SEE DETAIL PLAN)

LEGEND

- ROCKS : BOULDERS
- 8' HIGH CHAIN LINK FENCE
- POWER POLE
- M.H. MANHOLE
- C.B. CATCH BASIN
- EXISTING CONTOUR
- EXISTING GROUND ELEVATION (M.S.L.)
- (WELL 8) WELL NUMBER AND LOCATION
- PROPOSED CONTOUR
- D DRAIN LINE
- W WATER LINE
- S SEWER LINE

SCALE IN FEET: 0, 50, 100

REVISED 8-23-83

EAST END OF AEROVOX PLANT, NEW BEDFORD, MA.

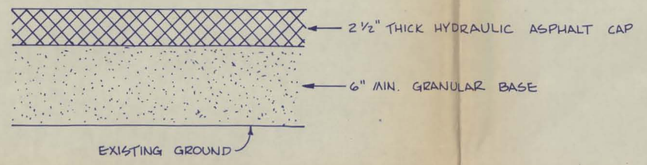
GHR ENGINEERING CORPORATION
75 TARKILN HILL ROAD NEW BEDFORD, MA 02745

DATE: MAY 9, 1983
SCALE: 1" = 20'
DRAWN: D.F.
CHECKED: R.S.C.
JOB NO: 2463

CLIENT: AEROVOX INCORPORATED

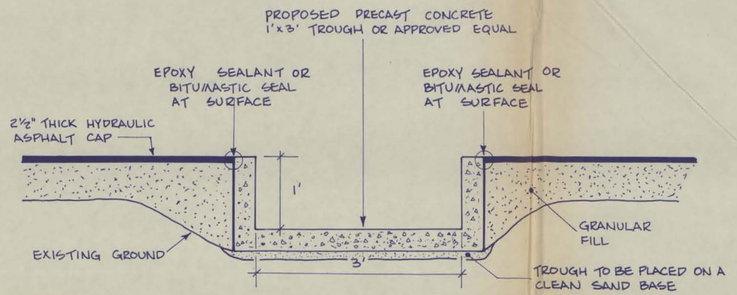
DWG. TITLE: PROPOSED GRADING PLAN

DWG. NO. PG-1



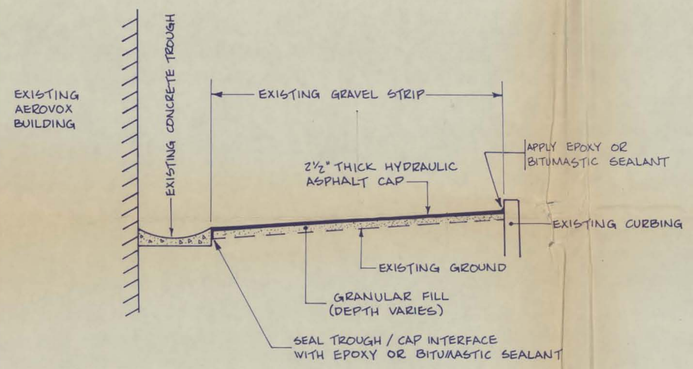
TYPICAL SECTION THROUGH PROPOSED PAVEMENT

NOT TO SCALE



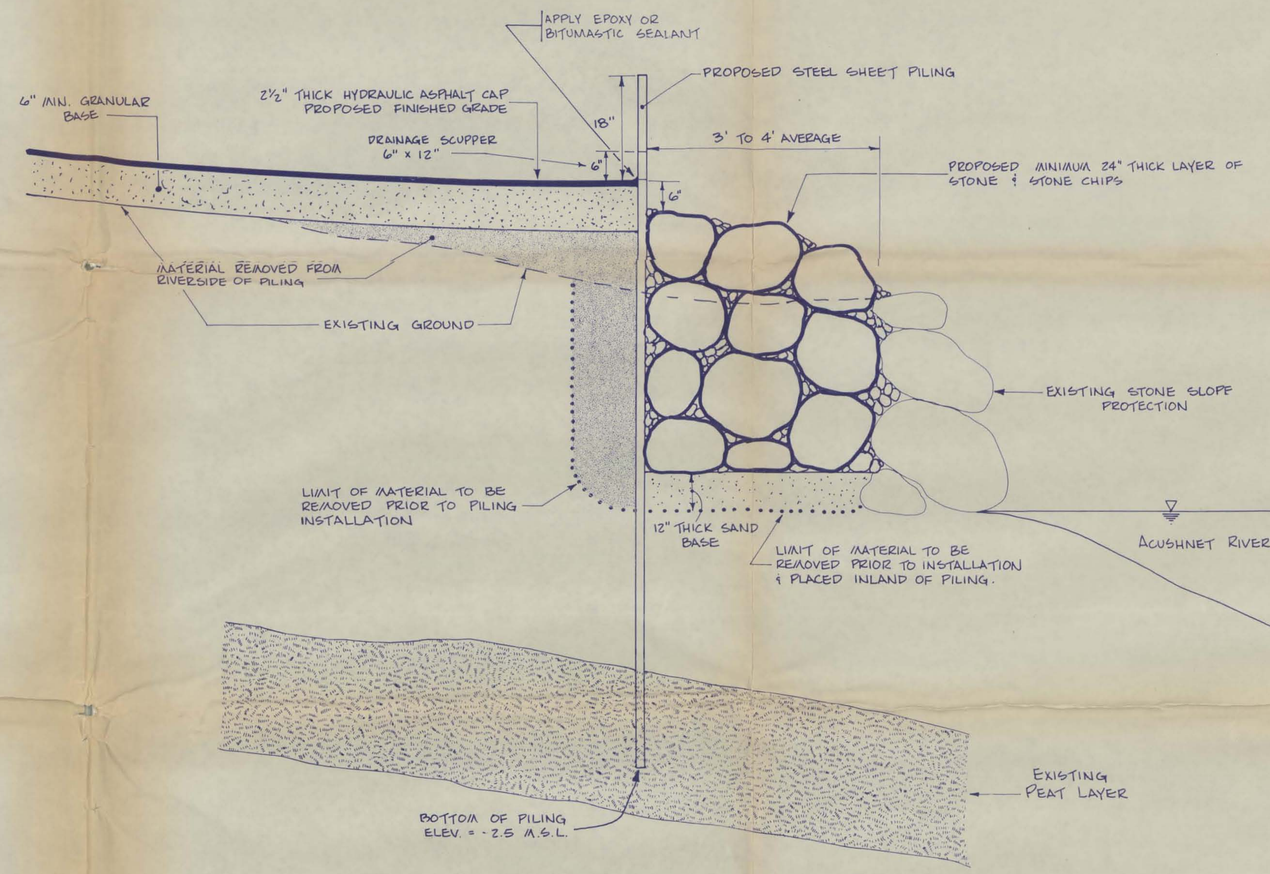
TYPICAL SECTION THROUGH PROPOSED SOUTH TROUGH EXTENSION

NOT TO SCALE



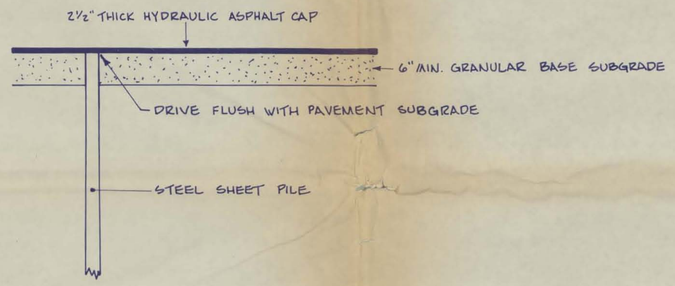
SECTION THROUGH GRAVEL STRIP ALONG NORTH TROUGH

NOT TO SCALE



TYPICAL SECTION THROUGH PROPOSED SHEET PILE CUT-OFF WALL

NOT TO SCALE



SECTION THROUGH TOP OF SHEET PILE WALL

NOT TO SCALE (WHERE WALL IS BELOW FINISH GRADE)

REVISED 8-23-83

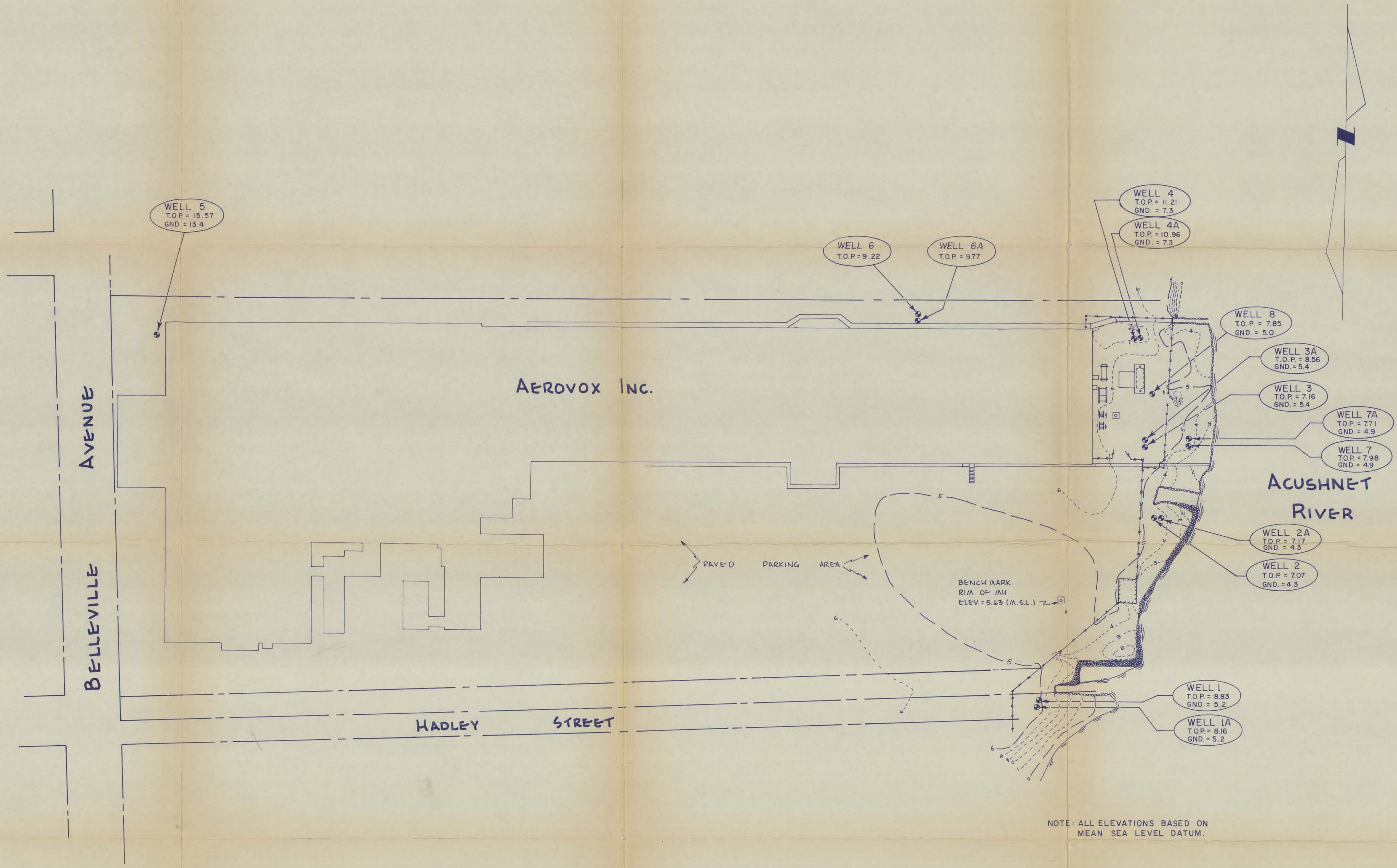
GHR ENGINEERING CORPORATION
75 TARKILN HILL ROAD · NEW BEDFORD, MA. 02745

DATE: 5-19-83
SCALE: AS NOTED
DRAWN: D.F.
CHECKED: R.S.C.
JOB NO: 2463

CLIENT: AEROVOX INCORPORATED

DWG. TITLE: SITE DETAILS PLAN

DWG. NO. D-1



NOTE: ALL ELEVATIONS BASED ON MEAN SEA LEVEL DATUM.

LEGEND

	HYDRANT
	POWER POLE
	CHAIN LINK FENCE
— -5— —	EXISTING CONTOUR
	ROCKS (SEA WALL)
M.S.L.	MEAN SEA LEVEL
GND.	GROUND ELEVATION
T.O.P.	ELEV. OF TOP OF EXTERIOR PIPE

AEROVOX PLANT, NEW BEDFORD, MASS.

GHR

75 TARKILN HILL ROAD · NEW BEDFORD, MA. 02745

DATE: 9-17-82
SCALE: 1" = 50'
DRAWN: D.F.
CHECKED: J.J.G.
JOB NO: 2463

CLIENT
AEROVOX INCORPORATED

DWG. TITLE
SITE PLAN SHOWING MONITORING WELL LOCATIONS

DWG. NO.
SP-1